

# THE AMERICAN Railroad Journal.

ESTABLISHED 1831.

Steam Navigation, Commerce, Finance, Machinery, Mining, Manufactures, New Inventions, Street Railroads.

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## AMERICAN RAILROAD JOURNAL.

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MR. JAMES J. WHITE, Ottawa, Canada, writer of "Our Canadian Letter," acts as agent for the AMERICAN RAILROAD JOURNAL COMPANY, in Canada. He is authorized to receive, in behalf of the company, subscriptions and advertisements for this journal; also news of the character which he can utilize in the preparation of his Letter, or send to us for use elsewhere within these columns. He respectfully invites information concerning Railroad matters generally, Mining, Banking, Finance and Manufactures.

ALL correspondence, communications and contributions intended for publication should be addressed to the "Editor of the AMERICAN RAILROAD JOURNAL." Business letters, subscriptions, orders for copies and advertisements should be sent to the "AMERICAN RAILROAD JOURNAL CO."

We invite railroad officers to send us notice of elections, transfers, appointments, resignations, etc.; and all our readers would oblige us by furnishing us with any items of news which may come to their knowledge, and are of a suitable nature for our columns. It is our intention to publish weekly full and accurate information regarding those enterprises and industries to which the AMERICAN RAILROAD JOURNAL is devoted, and to effect this end we solicit the co-operation of readers interested therein. We aim specially to record all new railway enterprises in the United States and Canada, and to note the progress of construction on all new roads and extensions; and we request those concerned in railway building to give us early information concerning the above, that our reports may be as complete as possible.

Correspondence and contributed articles are also requested for our special departments devoted to Finance, Commerce, Street Railways, and New Inventions. All communications should bear the name and address of the writer, not necessarily for publication, but to insure the editor's attention.

### A BENEFICIAL CHANGE.

WITH this number we make a radical change in the general "make up" of the AMERICAN RAILROAD JOURNAL, and the system now adopted will be adhered to in the future as closely as circumstances will permit.

Our first step toward marked improvement appears in the addition of four full pages to the publication, which gives it a total of thirty-two pages weekly. It is our intention to make another increase of four pages at an early date in order to enlarge still further the volume of our reading matter, and to accommodate the increasing number of our advertisers. Under no circumstances will we allow advertisements to encroach upon the space allotted to editorial and miscellaneous subjects, as we deem it our first duty to consider the interests of our readers.

The first pages of the JOURNAL will be devoted to Railroads, Steam Navigation, Manufactures, Machinery and Mining, commencing with the editorial department. Every issue will contain several leaders on these general topics, together with a number of editorial notes, which we hope to make a valuable feature of the publication. Following the editorials, we will regularly publish our weekly correspondence, commencing with "Our Canada Letter." Items of news relative to the above topics will follow the correspondence, including the notes of Organization, Incorporation, Construction and Consolidation, which have hitherto been published on the first page; and the department will conclude with the statements of Railroad Earnings and Railroad and Canal Dividends.

The pages immediately succeeding we shall devote to our Financial and Commercial Departments, both of which will be conducted with care and energy. These departments will contain editorial leaders and notes on appropriate subjects, Financial, and Commercial News, weekly reports of the New York,

Boston, Philadelphia, Baltimore and London stock exchanges, commercial statements and reports, and information of a useful character to business men. It is also our intention to organize an Insurance Department at an early date, recognising the importance of that branch of finance, and the need of its consideration in a business periodical such as the AMERICAN RAILROAD JOURNAL. This department we trust to make a special feature, conducting it for the mutual benefit of insurance companies and their policy holders. It will be under the editorial charge of a specialist who has contributed largely to the insurance press of this city.

The pages in the center of each issue will be devoted to general reading matter appertaining to the topics on which the AMERICAN RAILROAD JOURNAL treats. This matter will be compiled and selected with care, with a view solely to the interest of our readers.

Following the pages devoted to general reading, our Street Railway Department will be given space, and conducted vigorously in the interests of Street Railways and Stage Lines. In this department, which we commenced last week we have already outlined our intentions relative to its conduct, and no further mention of it is necessary here.

The last pages of the JOURNAL will be occupied by the Department of New Inventions, which has already been in successful operation for some weeks. Its aims and objects can be ascertained by reading the note at the head of its first column, and also by an inspection of its contents.

We make a further change, and devote a considerable space in and after each department to those advertisements appropriate to the topics discussed on the same or immediately preceding pages. By this means the advertiser has his announcements placed in that portion of the JOURNAL devoted to subjects *sui generis*, thus insuring instant attention.

These changes have not been made without

considerable trouble, but the latter has been cheerfully taken in the wish to benefit both our readers and advertisers. Each of the former will be enabled to turn in a moment to those topics which are to him of special interest, without reading matter that he can as well examine at his leisure or to which he need give but cursory attention, while the latter, our advertisers, will be assured a more thorough and valuable inspection of their advertisements. In addition to these changes we have increased our editorial corps, and trust that in its new and enlarged form and with its improved facilities, the AMERICAN RAILROAD JOURNAL may look for new and continued favor from its patrons.

#### RAILROAD WARS AND TRUCES.

"ADVERSITY makes strange bed-fellows." So goes the proverb. This is true of railroad companies as of other people. A pinch of hard times and the losses entailed by the Ohio river floods have sent a thrill of fraternity through the boards of directors lately, and at once they lower their arms, abandon their menacing fronts, and become conciliatory. "Sweet are the uses of adversity." Several such railroad disputes are now in process of settlement. Managers, who were before intent upon nothing but war upon their rivals, have suddenly become convinced that they can do better than fight.

Among those which may be mentioned is the controversy between the Wabash, St. Louis and Pacific, and the Chicago, Burlington and Quincy Railroad Companies, as to the use of the Hannibal and St. Joseph Railroad. Hitherto the Wabash managers, Messrs. Gould, Dillon and Sage, having bought a controlling interest in the Hannibal and St. Joseph from Mr. Duff, of Boston, have threatened to build an extension of it from Quincy to Chicago, a distance of 180 to 200 miles, which would closely parallel the Burlington road. Efforts have been made during the past week to hit upon some arrangement for a joint use and occupancy of the track of the latter; and although at present there seems to be a hitch in the negotiation, there is no doubt that an amicable understanding will, in time, be reached.

Another such dispute between the Union Pacific and the Northern Pacific has just been settled. These two companies have built roads into Montana and Idaho which compete for the same business. The Union Pacific controls a narrow gauge road from Salt Lake some 500 miles north to Butte City and Helena. It has been agreed that for a certain portion of the trade third rails shall be laid over both roads, so as to admit the cars of both companies on terms of equality to such competing points.

A notable feature of this compact is that the Union Pacific "Oregon Short Line," which was to have been extended to Baker City, is to terminate at Snake River; that portion west of Snake River to be built by the Oregon Navigation Company. There is a presumption that the Union Pacific Company are glad to let go of as much as they can of that over-ambitious undertaking. If it had not been begun it probably would not now be started.

An important consolidation of the roads extending from Buffalo to the oil regions of Pennsylvania, and from Rochester to the coal fields of Western Pennsylvania, some 600 miles in all, has been effected under the title of the Buffalo, New York and Philadelphia Railroad Company. These roads have been paying properties from local business heretofore, but are now to be further enriched by a contribution of through business. The New York, Lackawanna and Western is to use the Rochester wing for its Rochester entrance, and is to construct a short link so as to reach the southwestern part of the system near Salamanca; and it is quite feasible that an extension of the road may one day be made from the neighborhood of Oil City to Mansfield or Toledo. The Rochester and Pittsburgh Railroad, which has been a rival in the same field, is said to be injuriously affected by this unification of interests.

Contests between the Philadelphia and Reading and the Pennsylvania Railroad Companies continue without abatement; the Reading Company threatening to build an extension from Harrisburg to Pittsburgh, and the Pennsylvania threatening to build a branch line to Phoenixville and Reading. The Reading Company has just been relieved by the Court from the custody of the Receivers. If the effort to raise money upon a Car Trust is successful the Reading may become a very formidable antagonist, not only in the coal field but in regard to its main line connections to Pittsburgh and the Southwest.

In the Southwest, what little opposition and friction there may have been between the Missouri Pacific system and the Texas Central system and the Gulf, Colorado and Santa Fe, is likely to be diminished, or altogether removed, by the control of the former passing into the hands of the Southern Pacific syndicate. The purchase of the securities held by the Morgan estate gives the Southern Pacific the desired entrance and terminal privileges at New Orleans, and also carries with it the control of about 700 miles of road spread over the State of Texas, which must hereafter feed the Texas and New Orleans line. The St. Louis and San Francisco Railroad being owned in common,

and worked in harmony by the owners of the Missouri Pacific and Southern Pacific systems respectively, there is reason to suppose that those two great systems will extend the same harmony over their entire network of roads between the Mississippi River at St. Louis and New Orleans, and the Rio Grande at Laredo and El Paso.

#### SUBMARINE NAVIGATION.

IT is singular that with the almost universal study of the problems of cheap and rapid transportation, so little attention has been paid to the subject of submarine navigation. The possibilities and probabilities resulting from investigation and experiment in this branch of mechanical science are wonderfully numerous, yet the inventor's mind and the capitalist's pocket are rarely opened in its cause.

Hitherto, all efforts in the direction of submarine navigation appear to have been made solely with a view to produce an engine of warfare, not a vessel for the peaceful transportation of passengers and merchandise, and in so doing scientists and engineers are following the same instincts that actuated the ancient world and prevail to-day among barbaric tribes. So far as history teaches all navigation originated in the interests of warfare, and was first utilized as a means for the transportation of armies. We presume the old *triremes* of Roman days, and the still earlier vessels of Egypt and Assyria were built for warlike purposes, for the ancients were perpetually at war, and would no doubt have scorned to take so much pains and labor to devise vessels for the secondary purposes of travel and commerce. The *proas* of the South Sea Islanders were designed for the warlike invasion of neighboring islands, and their use in times of peace came afterward as a subsidiary purpose or adaptation. Inventors of submarine vessels in the present day seem to aim no higher than the ancients and savages, and are comparatively satisfied when they can devise a new form of torpedo or submarine ram, and put it into practicable shape.

Times have changed, and in these days of civilization, warfare plays a much inferior part to trade and commerce in the life of nations, but this fact seems to be forgotten by those who seek to achieve new discoveries in submarine navigation. It is a pity they cannot curb their warlike propensities and devote their time and ability to devise submarine vessels whose mission shall be loftier than the slaughter of mankind. In America, where research and investigation may always look for sympathy from capital, wonders might be achieved in this di-



rection by the exercise of science and determination.

The problem of submarine navigation has nothing impossible about it. The marvelous results of scientific and chemical research and the development of electricity, render that possible which a century ago would seem fabulously beyond the reach of human attainment. Air can be manufactured, and the lungs given their food when the natural atmosphere is no longer within reach; men may walk on the bed of the ocean and observe the wonders of the deep as leisurely as a naturalist may pursue his calling in a field or garden; vessels can be made to float and brave the fiercest storms, while constructed wholly of iron. Electricity in itself furnishes power, light and heat, and the difficulties in the way of submarine navigation appear to be simply those of application not the lack of proper principles and methods.

Much curiosity was evinced some years ago by the publication of Jules Verne's imaginative tale "Twenty Thousand Leagues Under the Sea," and the vividly drawn story was widely read. Unfortunately it was stamped with the brand of fiction, and consequently the really scientific nature of the work was overlooked, but his description of Captain Nemo's wonderful submarine vessel, the "Nautilus," does not in a single instance overstep the bounds of possibility. Its construction is a feasible accomplishment, and would not call for a greater outlay of capital than did the building of many of our ships of war. Why has not some scientist turned his attention to the construction of a submarine vessel for transportation? Why has not some millionaire satiated with the excitements and pleasures of adventure devoted a portion of his wealth to the construction of a submarine yacht? There may be answers to these questions, but we doubt if they are sensible or possess a satisfying reason.

Man has been very ingenious and progressive in devising means of travel on the surface of the land and seas, but not above or below them and there are pinnacles of fame still awaiting occupancy by discoverers of practicable means of aerial and submarine locomotion. The former may demand the knowledge of hitherto unknown and possibly, non-existing principles, but the latter does not, and when submarine navigation is an accomplished fact, the universal comment may be expected, "Why was it not done before?"

#### STEAM TELEGRAPHY.

A CORRESPONDENT of the New York *Herald* suggests the employment of the Morse telegraphic alphabet, as the basis of a

system of steam signals for ocean navigation. His plan is to use the dash and the dot as employed by telegraphic operators, a long whistle representing the dash, and a short whistle the dot. He reasons as follows:—

"Two expert telegraph operators can take opposite locomotives and talk to each other with the greatest ease, and I don't see why sea captains should not be able to do the same thing. Out in the West, some years ago, a frame bridge broke down over a great river, and from shore to shore there was no means of communication. Well, somebody thought of getting two telegraph experts together. One mounted a locomotive on one side of the river; the other took charge of a locomotive on the opposite bank. By working the steam valve and putting the whistle in play they managed to send messages to each other, and the bridge was speedily reconstructed, mainly through this ingenious application of the locomotive whistle. I've got another idea. Why shouldn't people at sea when they are visible to each other in clear weather talk to each other by streaks of steam in circumstances where the sound of a whistle could not reach? A short puff of steam would be equivalent to a dot in the Morse system, and a long streak would be equivalent to a dash. By using the steam jets on a fixed scientific principle, two captains watching each other through binoculars from a long distance could communicate with each other easily."

There is much in this ingenious suggestion to commend it to the attention of navigators. Its simplicity and ready acquirement are strong points in its favor, and the extent of communication between vessels which its use would permit, should greatly mitigate the chances of collision in foggy weather. At present vessels in close proximity during a fog are as restricted in their means of communication as a hand organ is in its musical selections. A few leading signals may be conveyed, but there is no system in existence by which the officers of two vessels may hold general sign converse with each other.

#### EDITORIAL NOTES.

WE must urge the forbearance of our readers regarding our tardiness in issuing the present number of the AMERICAN RAILROAD JOURNAL. The increase in its pages and the general remodelling of its interior form caused delays that were unavoidable. The additional fact of the occurrence of a legal holiday on February 22d, still further retarded our progress. We feel convinced that our excuses are amply sufficient and that the improved appearance of the JOURNAL will compensate for the delay, for, be it remembered, an improvement takes time to effect. Changes made hastily are no improvement, at all, and betray a lack of stability and permanence. Hereafter the AMERICAN RAILROAD JOURNAL will appear

"on time," thus setting an excellent example to those organizations whose interests it represents. It was our desire to present this number complete in every respect, but unfortunately "Our Canadian Letter" arrived too late for insertion, frustrating our intentions to a limited extent.

WE have received, this week, Section III of "KNIGHT'S New Mechanical Dictionary of Tools, Instruments, Machines, Processes and Engineering," published by Houghton, Mifflin & Co., of Boston. Like the preceding sections the volume is conspicuous for the care taken in the collection of subjects and detail of description. It continues in the alphabetical system commencing with Hydraulicking and terminating with Printing Presses, covering in all 240 pages, and illustrated with several hundred wood engravings. The death of its author, Edward H. Knight, A.M., LL.D., on January 22, was a severe loss to the field of mechanical and scientific literature in which he has ably figured for many years, and it is gratifying to learn from the publishers that the manuscript of the present work was completed before his death, and that the delay in issuing the remaining sections will be of a few weeks only, caused by the necessity of reading the proof-sheets without his assistance. Section III is bound in paper, 4to size and is sold by the publishers for \$2.00.

THE bill reducing the fare on the elevated railroads in this city to five cents has been passed by the New York legislature and now awaits Governor Cleveland's signature. The Governor has listened to a number of arguments submitted by both the supporters and opponents of the measure, and he has until next Friday in which to reach a decision. It is considered probable that he will approve the bill.

OUR table of contents, formerly printed at the foot of the first editorial column, has been transferred to the first page of the cover. The departments are first indexed, followed by the captions of their leading topics, and this arrangement will enable readers to ascertain the contents of the JOURNAL without purchasing a copy. We call their attention to this generous act of self-sacrifice on our part.

INSURANCE, both life and fire, has made such great advances since our publication was established, that at present it rivals banking in financial importance. We have recognized this fact, and propose in a few weeks, to establish an Insurance Department. It will not be an experiment, but a fixture in our columns.

## CORRESPONDENCE.

[COMMUNICATIONS are solicited for this department on all subjects pertaining to Railroads, Steam Navigation, Machinery and Manufactures. No attention will be paid to communications unless the name and address of the writer is furnished us, though if desired, they will be withheld from publication. We assume no responsibility for statements made by correspondents, and we do not necessarily endorse ideas advanced by them. Under these conditions we think it of value to our readers to devote a liberal space to the free discussion by others—whose opinions may be at variance with our own—of subjects pertinent to this department of the AMERICAN RAILROAD JOURNAL.]

### Defective Vision Again—A Reply to Dr. Herrick.

EDITOR AMERICAN RAILROAD JOURNAL.

THE aim in all discussions should be to arrive at facts, otherwise any conclusions that may be reached are liable to be "warped" and altogether unprofitable. A strict adherence to truth and honest conviction is the shortest way out of a discussion which may be made tortuous and disagreeable by a trifling evasion of the former, and a persistent refusal to be convinced. It frequently happens that a person's statement does not properly convey his ideas, and there is a misunderstanding and an accusation of false statements which often bring out unpleasant remarks that injure rather than strengthen an argument.

The foregoing has been brought to mind by an effort to strengthen the "weak points" which Dr. Herrick claims to have discovered in my article of December 30, on "Color-Blindness." The Doctor is apprehensive that many might be misled by the article in question, which, he says, contains several erroneous statements and conclusions. The first "erroneous statement" that attracts his attention is that experts are asking Congress for an appropriation to pay them for professional services. My authority for this is the statement of a gentleman who is a "laborer in the vineyard," and knows whereof he speaks. My informant states that Congress was asked for an appropriation for the investigation of color-blindness, at its last session, and soon after its adjournment, I received a published speech on the subject by a member whose name I do not recollect, and the pamphlet containing it has been mislaid.

With these facts in view it may be safely inferred that "plums" are a consideration, although it does not follow that Congress would not do a good thing by appropriating a reasonable sum for a thorough investigation of the subject, and it is proper that those who shake the tree should get the plums. Then the Doctor attacks several of what he characterizes as weak points, but, as he does not dissent from the view therein expressed in any essential point, his criticisms, which are of an exceedingly mild type, will be passed over. But further along he says I am fearful lest some expert himself might be afflicted with defective vision, which would make a bad matter worse. I did advance such an idea, and since it was written the following has occurred and is widely published, which will strengthen my position somewhat:—

"The following incident is a fair illustration

of the reliability of 'color-blind' experts, and is also suggestive that precautions in this respect may sometimes be carried to an excess that is not creditable to the general management of roads nor just to employees. A locomotive engineer on a certain prominent road, upon which color-blind regulations had been some time in force, was formally examined by the official ophthalmologist and pronounced incapable in consequence of defective vision. The engineer was, of course, discharged from service. Not long afterwards he rigged himself up as a rustic farm laborer and presented himself at the city office of the expert, saying that something was the matter with his eyes and requesting to be examined. The oculist, of course, did not recognize him, and after a careful examination gave him a certificate that his vision and capacity of discriminating colors were perfectly normal. The engineer, it is now said, stands a fair chance of being reinstated."

It thus appears that I had sufficient grounds on which to base my fears that great injustice would be done to a very worthy class of men, and that life and property would be endangered by the very means adopted to promote safety. I have stated repeatedly that it is important that a close watch should be kept for defective vision in operatives, and none but those who are reliable kept in service in any capacity that requires perfect vision for safety. I take the ground that nothing should remain undone for the safety of life and property, but our labors in that direction should be governed by reason and not run into useless tinkering. Overdoing even a good thing spoils it, and when a man passes an examination showing him to be capable of performing the duties we ask of him, I cannot see the justice or propriety in requiring him to be especially sharp in matters in no way connected with his duties. However, let us hope the experts will give us the real benefit of their knowledge on the subject, and get well paid for it.

WM. S. HUNTINGTON.

RAILROAD engines are now provided with a hose and pump to throw water on burning cars, but when a train has jumped the track the engineer is too busy digging himself out of the debris to think of experimenting with the apparatus.

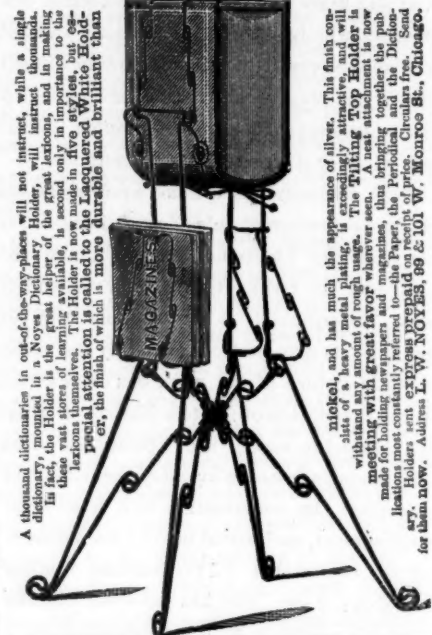
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## WEEKLY NEWS ITEMS.

[Items of information suitable for this department and especially those adapted for the columns devoted to the Organization, Incorporation, Construction and Consolidation of Railways, are earnestly desired from our readers.]

## Incorporation.

ARTICLES of incorporation of the Bank of Banks was filed on the 17th inst. in the office of the County Clerk of New York county. The first directors and trustees are Elliot F. Shepard, Augustus D. Shepard, L. C. Whitton and William L. Skedmore. The capital stock is to be \$100,000, with the privilege of increasing it to \$1,000,000.

A CERTIFICATE of incorporation of the Staten Island Terminal Railroad Company was filed at Albany on the 13th inst. The capital is \$1,000,000. The road is to run from New York Bay, near the village of Edgewater, and thence by the most feasible and direct route through the town of Southfield to the State Line in Arthur's Kill, at or near the place known as Rossville. The length of the road will be ten miles; capital, \$50,000.

A CHARTER was granted at Harrisburg, Penn., on the 14th inst., for the merger and consolidation of the Buffalo, New York and Philadelphia Railway Company, the Olean and Salamanca Railroad Company, the Oil City and Chicago Railroad Company, and the Buffalo, Pittsburgh and Western Railroad Company, with a capital stock of \$20,350,000. The name of the new corporation is the Buffalo, New York and Philadelphia Railroad Company, with offices at Philadelphia. A certificate of consolidation of the above roads was also filed on the 14th inst., with the Secretary of State at Albany, N. Y.

## Organization.

THE officers of the Kingston and Pembroke Railway Company, elected at the annual meeting held at Kingston, Canada, on the 14th inst., are: C. F. Gildersleeve, president; J. R. Flower, vice-president, and G. Osborne, secretary-treasurer.

THE annual election for directors of the Boston and Albany Railroad Company held in Boston on the 14th inst., resulted in the choice of the following board: William Bliss of Boston, Henry Colt of Pittsfield, George O. Crocker of New Bedford, John Cummings of Woburn, Ed-

THE managers of the Schuylkill Navigation Company for the ensuing year are: Frederick Fraley, John N. Hutchinson, Charles W. Wharton, George Brooke, Charles Baber, Michael Ward, Thomas R. Patton. The officers are: President, Frederick Fraley; treasurer and secretary, Richard Wilkins.

THE directors of the Summit Branch Railroad Company elected on the 13th inst., are: George B. Roberts, A. J. Cassatt, Edmund Smith, Strickland Kneass, Wistar Morris, N. P. Shortridge, J. N. DuBarry, John P. Green, James W. Johnson, Edwin P. Wooster and Isaac J. Wistar.

THE directors of the Pennsylvania Canal Company, elected on the 13th inst., are: Isaac

J. Wistar, George B. Roberts, A. J. Cassatt, Strickland Kneass, Wistar Morris, William J. Howard, Edmund Smith, M. Hall Stanton, Alexander Biddle, S. M. Felten, Simon Gratz and John P. Green.

At the annual meeting of the Boston Lead Company, held in Boston on the 12th inst., the following directors were elected: William P. Hunt, Charles M. Clapp, Jacob Pfaff, Phineas B. Smith, Jr., William G. Thacher, Thomas F. Temple. President, Samuel Little; treasurer, Wm. J. Bride. The annual statement showed a prosperous year's business and a large increase over previous years.

ward L. Davis of Worcester, Jarvis N. Dunham of Pittsfield, Edward B. Gillett of Westfield, Moses Kimball of Brookline, John C. Phillips of Boston, Jacob C. Rogers of Peabody, James A. Rumrill of Springfield, Charles S. Sargent of Brookline, Mahlon D. Spaulding of Boston. At a subsequent meeting of the directors William Bliss was re-elected president; James A. Rumrill, vice-president; Charles E. Stevens, treasurer; and William A. Rumrill, clerk.

At the annual meeting of the Old Dominion Steamship Company, held in this city on the 13th inst., the following directors were elected: N. L. McCready, John M. Robinson, Isaac Bell, George F. Tyler, C. P. Huntington, John Bodine, C. P. Fisher, C. C. Stockley and Jacob Moore. The old officers, consisting of N. L. McCready, president; John M. Robinson, vice-president; Isaac Bell, president, pro tem., and W. H. Stanford, secretary, were re-elected. This company co-operates with the Seaboard and Roanoke, Norfolk and Western and Chesapeake and Ohio railroads, which are supposed to have a controlling interest of the stock.

At a meeting of the stockholders of the Louisville, New Albany and St. Louis Railway Company, held at Mt. Carmel, Ind., on the 14th inst., the following directors were elected, the board being increased four members to give the Louisville and Evansville representation: W. T. Hart, Isaac T. Burr, Jonas H. French, James H. French, James H. Wilson, C. N. Nutt, F. B. Taylor, John Goldthwait and F. B. White, of Boston; Colonel Bennett H. Young, Arthur Cary, C. Brockenbrough, St. John Boyle, of Louisville; William Heitman, Samuel Bayard, R. K. Dunkerson, of Evansville; Morris McDonald, New Albany, and Bluford Wilson, Springfield, Ill.

THE directors of the recently consolidated Buffalo, New York and Philadelphia Railroad Company—composed of the Buffalo, Pittsburgh and Western, the Olean and Salamanca, the Oil City and Chicago and the Buffalo, New York and Philadelphia—are: John W. Jones, C. H. Clark, E. A. Rollins, B. K. Jamison, of Philadelphia; E. F. Winslow, Bryce Gray, I. N. Sehman, A. N. Martin, C. H. Allen, E. L. Owen, of New York City; P. P. Pratt, E. P. Beals, B. C. Ramsey, of Buffalo, N. Y. Officers—President, J. W. Jones; first vice-president, C. H. Allen; second vice-president, A. N. Martin; secretary, J. B. Trimble, Camden, N. J.; treasurer, F. S. Buell, Buffalo, N. Y.

At the annual meeting of the stockholders of the Louisville, New Albany and Chicago Railroad Company, held on the 13th inst., the fol-

lowing board of directors was elected: John J. Astor, Robert L. Kennedy, Samuel Sloan, R. G. Rolston, E. H. Green, William Wheelright, and J. A. Garguilo, of New York, and E. D. Standiford, R. S. Veech, J. Caldwell, H. V. Newcomb, R. R. Hill and Bennett H. Young, of Louisville. At a meeting of the directors held on the 14th inst., the following officers were chosen: President, Bennett H. Young; first vice-president, R. G. Rolston; second vice-president, E. B. Stahlman; executive committee, Bennett H. Young, R. G. Rolston and Samuel Sloan.

THE officers of the Ontario Pacific Railway Company, elected at a meeting of the directors held at Cornwall, Ontario, on the 14th inst., are: D. Bergin, M. P., president and managing director; Joseph Kerr, M. P. P., vice-president, D. A. Flack, secretary and treasurer; J. L. P. O'Hanly, C. E., chief engineer; John Bergin, solicitor. The Ontario Pacific Railway starts from Cornwall, touching at Harrison's Corners, Newington, South Finch, Berwick and Crysaler, to Ottawa, thence by Arnprior and Ingersoll, to French River, with branches from the main line at Newington, via West Winchester, to Perth and Carleton Place, and from Eganville to Pembroke. Of the capital stock, \$300,000 has been subscribed and ten per cent deposited in the Ontario Bank.

## Construction.

FIFTEEN miles of the Vicksburg, Shreveport, and Pacific Railroad will be completed the 1st of April.

THE rails on the new track of the Pennsylvania Railroad north of Lancaster, Penn., have all been laid.

FIVE additional kilometres have been completed on the Gulf end of the Tehuantepec Railway, making a total of forty-five kilometres constructed.

THE President has accepted a section of twenty-five miles of the Northern Pacific Railroad in Montana coming eastward, and ending 325 miles from Wallula Junction, Washington Territory.

THE Toledo and Indianapolis Railroad has been completed to Findley, Ohio, forty-five miles southward from the starting point at Toledo. At Findley connection is made with the Indiana, Bloomington and Western Railroad.

ACTIVE track-laying is being performed on the New Orleans and Mississippi Valley Railroad north of Kenner, and there are at present enough of steel rails on hand to complete the line to College Point, a distance of forty miles from the city.

THE Pennsylvania Railroad Company is surveying a line from Ardmore to a point on the Philadelphia, Wilmington and Baltimore, above the mouth of the Schuylkill River. The purpose of this link is to relieve the main line of the pressure of freight.

THE work on the Lake Borgne Railroad, from New Orleans to Proctorville, was commenced at Green's Creedmoor place, in Terre-aux-Bœuffs, on the 15th inst., and will be commenced at the lower line of the city about the 25th inst. By the last of the month grading

will be pushed from four different points on the line.

The people of Natchez, Miss., are just beginning to realize that the New Orleans and Mississippi Valley Railroad will not pass by their city, and have placed two engineers in the field to survey a line from Natchez to Port Gibson, which, when completed, will be forwarded to R. T. Wilson, the president of the company, at New York.

The contract of Rogers & Ballentine on the Natchez, Red River and Texas Railroad to Trinity is completed, with the exception of a small amount of work to be done at the approach of several bridges. Track-laying is being pushed as rapidly as possible and has reached a point eighteen miles west of Vidalia, and almost in sight of Trinity.

A SPECIAL to the New Orleans *Times-Democrat* from Waco, Texas, says that the Texas and St. Louis Narrow-Gauge Railroad will be completed through to Cairo and St. Louis by the 1st of April and be ready to compete for through business for all points North and East. It is believed that as soon as this road is opened through to St. Louis, its western end will be pushed from Gatesville to the Rio Grande, there connecting with the Mexican system.

The work of construction on the Kingston and Pembroke Railway north of the Mississippi River, has been prosecuted during the past year. The line was opened for traffic to the Clyde River in December last, and will be opened to the Madawaska River during the ensuing summer. The Government bonus for the second section of ten miles of completed railway north of the Mississippi River has been received. During the year 1882, the company spent \$900,000 on construction and repairs.

G. CLINTON GARDNER, general manager of the Mexican National Railway, was interviewed while in Galveston, Texas, on the 14th inst., and is reported to have said that the northern portion of the line was completed to Garsia, thirty-two miles beyond Monterey, and that the national government of Mexico has extended the time for the completion of the railway in Mexico for ten years, provided the railway company would agree to build 500 kilometres each and every year until their lines were completed.

The contracts for the graduation and masonry of the new line of the Pennsylvania Railroad Company as far as Pottstown have been let, the agreement requiring the work to be finished by October 1. The route selected is very direct, with little curvature and light grades. At Phoenixville this road will connect with the Phoenixville and Westchester branch of the Pennsylvania Railroad via Frazer Station on the main line. The contracts have been let in several sections, the first five miles, including the tunnel at Phoenixville, being awarded to Charles McFadden, of Philadelphia, and John Kelly, and the other sections to Demthorne & March, of Phoenixville, Kelly & Bush, of Lancaster, and Mr. McCall, of Reading. The section from Philadelphia to Phoenixville, where connection is made with the West Chester branch, will probably be opened in the fall. This will form a belt line from Philadelphia to West Chester and Phoenixville via the Schuylkill valley branch to Phoenixville, thence across to West Chester via Frazer Station, and back to Philadelphia by the West Chester and Media branch.

### Rhode Island Railroads.

HENRY STAPLES, Railroad Commissioner of Rhode Island, in the annual report which he has just submitted to the General Assembly, expresses the regret that there was no new road constructed last year. The Rhode Island and Massachusetts and the Providence, Warren and Bristol companies should be brought to the Union Station in Providence, and the Providence and Springfield road should be extended far beyond its present terminal at Pascoag. It is also unfortunate that another year has passed without seeing the work actually begun for improved terminal facilities in Providence. The whole number of corporations having lines in the State, including the Union (street) Railroad of Providence, is 18; total mileage, 282,425; total receipts, \$12,494,124.28; expenses, \$10,937,936.14; net earnings, \$1,525,221.04; total surplus net, \$2,726,843.50; passengers carried, 29,835,019; tons of freight carried, 5,249,792½. The aggregate of the year's business, as compared with that of the previous year, shows a net increase in the receipts of \$1,406,122.62, but to obtain this, with the ordinary and extraordinary expenditures, the expenses were increased \$1,435,962.62, and the net earnings actually decreased \$246,722.56. Only six corporations show a gain in earnings. The Commissioner refers at length to the fact that car loads of flour are often shipped from certain localities in the West to Boston at a much less rate than to Providence, the mileage being about the same, and suggests that if Rhode Island flour merchants wish the illegality of this established they bring a test suit in the United States courts.

### Illinois Central Railroad Company.

THE earnings of the Illinois Central Railroad Company (estimated) for the month of January, 1883, were as follows:—

	In Illinois 919 miles.	In Iowa 402 miles.	Southern Div. 578 3.10 miles.	Total, 1899 3.10 miles.
Freight.....	\$315,920	\$78,420	\$335,360	\$729,700
Passengers.....	116,252	35,328	56,050	207,630
Miscellaneous...	99,090	6,200	16,000	121,290
Total.....	\$531,262	\$119,948	\$407,410	\$1,058,620
Jan. '82, actual..	588,261	153,483	272,708	1,019,453

### LAND DEPARTMENT.

3,886 26-100 acres sold during Jan., 1883, for... \$17,547 92  
Collections month of January, 1883..... 16,940 04

L. A. CATLIN, Secretary.

NOTE.—The regular semi-annual dividend of three and one-half per cent; also, an extra dividend of one-half of one per cent from the earnings of the Southern division for the six months ending December 31, 1882, will be paid March 1.

### Paper Car Wheels.

THE following items, extracted from the report of President Darwin to the stockholders of the Allen Paper Car Wheel Company, at their annual meeting, February 14, 1883, may interest railway managers, as showing the progress made in introducing, and the favor in which the paper wheel is held.

The receipts of the Company in 1880, the year

of its organization, and the succeeding years, were as follows:—

In 1880.....	\$286,163 72
In 1881.....	593,057 72
In 1882.....	782,353 32

The total number of wheels made to February 1, is about 30,000. Of this number the Company have not learned of a single instance where loss of life to a passenger or employé, or any serious injury to the rolling-stock or road-bed, was caused by the breaking of a paper wheel or an axle used in connection with them. The business of January last was the largest, with one or two exceptions, since the organization of the Company, and the first six days of February of the present year they booked orders for more wheels than for the entire corresponding month of last year. During the last year they have added \$67,695.32 in improvements to their already extensive plants—making their present capacity 30,000 wheels a year.

### General News.

A FORMAL application for the termination of the Philadelphia and Reading receivership was made by counsel for the company to Judge Butler in the United States Circuit Court at Philadelphia on the 14th inst. There was no opposition, and a decree was made by the court ordering the receivers to hand over to the Union Trust Company, as trustee, all the rolling-stock and equipments of the Reading companies, to be held until certain obligations shall be met, when the receivership will be finally discharged. The president stated that the only delay likely to attend the final transfer of the property from the receivers to the company will be such as is required in order to receive the money for the new car trust certificates, and pay with it the outstanding receivers' certificates for about the same amount—\$2,000,000. The whole thing may, it is thought, be settled by the close of this month.

At the annual meeting of the stockholders of the Boston and Albany Railroad Company, held in Boston on the 14th inst., it was voted to ratify the recent issue of bonds and notes, and especially the bonds issued to the Commonwealth of Massachusetts in exchange for the stock of the corporation. It was also voted that Moses Kimball, John Cummings and Charles S. Sargent be appointed to approve and certify all bonds and all notes, payable at periods of more than twelve months from the date thereof, which may hereafter be issued by the road, and that the approval and certificate of either of them should be sufficient.

THE annual report of the Richelieu and Ontario Navigation Company states that the receipts for the season of 1882 were \$504,226 as against \$492,976 for that of 1881, a gain of \$11,250. The disbursements for 1882 were \$418,420 against \$460,293 in 1881. The profits for the year amounted to \$85,806, which with the reserve of last year and the amount received for the steamer "L'Assomption" makes a total of \$112,116. Two semi-annual dividends of 3 per cent or about \$95,340 have been paid out of this, leaving \$26,776 to be carried over to next year.

ANOTHER great bridge is in course of con-



struction across the Missouri River, twenty miles north of Council Bluffs, Iowa. It is for the use of the Sioux City and Pacific Railroad into Nebraska. When completed it will cost nearly \$1,000,000. The piers are iron, the caissons being filled with concrete masonry, and are 110 feet high. The superstructure will be of iron, 1,000 feet long, about one-third less than the Union Pacific Railroad bridge at Council Bluffs. The masonry and piers will all be up by August 1, and the bridge will be ready for use by November next. The peculiarity of the soil and banks of the Missouri River make the problem of engineering one of the most perplexing character, but the success in bridging the stream at Council Bluffs has settled the question of the practicability of another bridge.

THE contract for lighting the New York and Brooklyn Bridge has been awarded to the United States Illuminating Company, which is the local organization of the United States Electric Lighting Company of this city. Bids were made by all the principal electric light companies in the country. Two separate circuits are to be used, which will feed alternate lamps on both sides of the bridge, so that if any accident should happen to one of the engines only the alternate lamps will be extinguished. Seventy powerful arc lights will be distributed on the bridge.

THE Pittsburgh, Cincinnati and St. Louis Railway Company will commence the erection of new shops at Columbus, Ohio, in the spring. The shops will cost about \$537,000, exclusive of tools, and will be equipped for the capacity to turn out fifty locomotives and about 3,000 cars per year, in addition to doing the general repair work for the Western division of the Pittsburgh, Cincinnati and St. Louis, the Little Miami, and the Eastern division of the Columbus, Chicago and Indiana Central roads.

DURING the month of January there arrived in the various customs districts of the United States 16,307 passengers, of whom 12,940 were immigrants, 2,067 citizens of the United States returning from abroad, and 1,300 aliens not intending to remain in this country. The number of immigrants during the seven months ended January 31, 1883, was 283,419; for the same period ended January 31, 1882, the number was 346,846.

A DECREE was entered in the Circuit Court of Richmond on the 16th inst. for the resale of the Washington and Western Railroad, formerly called the Washington and Ohio Railroad. The road was first sold for \$592,000, of which \$50,000 was paid in cash and bonds were given for the remainder. The purchasers failed in the first deferred payment, and now consent to a resale, which takes place in about forty days.

THERE will be four bridges over the Schuylkill River on the line of the route of the Pennsylvania Railroad up the Schuylkill Valley. The first crosses the river at Manayunk; the second at Brooke's farm, east of Pottstown; the third will be above Pottstown, and the fourth a short distance this side of Reading.

## THE COST OF ADVERTISING

For any responsible advertiser, making application in good faith, we prepare and furnish a written estimate, showing the cost of any proposed advertising in the leading Newspapers of the United States and Dominion of Canada.

We prepare and exhibit printed proofs of any proposed advertisements.

For the preparing of estimates no charge is made, and the applicant is placed under no obligation to transact his advertising business through us unless it appears to him that by doing so he will best advance his own interests.

A copy of the advertisement, a list of the papers, the space the advertisement is to occupy and the time it is to appear, should all be given with the application for an estimate of the cost.

When an advertiser does not know what he wants or what he ought to do, he can designate some sum of money within which he wishes to limit his expenditure; this will enable us to prepare for him such a list of papers as will be the best for his purpose, within the limits which he prescribes.

Send 25c. for 100-page pamphlet. Address

### GEO. P. ROWELL & CO.

Newspaper Advertising Bureau,

(Printing House Square,  
Opposite Tribune Building.)

10 Spruce St., New York.

## NEW YORK AND NEW ENGLAND RAILROAD.

The only Line running Pullman Palace cars between

**BOSTON AND NEW YORK**

(via Hartford and New Haven).

Express train leaves Boston 8:45 A. M., arrives at New York 4:22 P. M.

## THE NORWICH LINE

—BETWEEN—

**BOSTON AND NEW YORK.**

Steamboat train leaves Boston 6:30 P. M. arrives at New London at 10:00 P. M., connecting with the new steamer **City of Worcester**, Monday, Wednesdays and Fridays, and **City of New York**, Tuesdays, Thursdays and Saturdays. Returning, steamer leaves Pier 40, North River, New York, at 4:30 P. M., connecting at New London with train leaving at 4:05 A. M., arriving in Boston at 8:00 A. M. Good night's rest on the boat.

Ask for Tickets via N. Y. & N. E. R. R.

Office 322 Washington st., Depot foot Summer st., Boston.

M. FELTON, JR.,  
Gen'l Manager.

A. C. KENDALL,  
Gen'l Pass. Agent.

## STRIKING HEAD LINES.

Are used to call attention to the fact that this is an advertisement of the **CHICAGO, MILWAUKEE & ST. PAUL RAILWAY.**

Its **EIGHT** Trunk Lines traverse the best portions of Northern Illinois, Wisconsin, Minnesota, Dakota and Iowa.

Located directly on its lines are the cities of **CHICAGO, Milwaukee, La Crosse, Winona, St. Paul, Minneapolis, Madison, Prairie du Chien, Mason City, Sioux City, Yankton, Albert Lea, Aberdeen, Dubuque, Rock Island, Cedar Rapids, and Council Bluffs**, as well as innumerable other principal business centers and favorite resorts; and passengers going West, North, South or East are able to use the **CHICAGO, MILWAUKEE & ST. PAUL RAILWAY** to the best advantage.

Ticket offices everywhere are supplied with Maps and Time Tables which detail the merits of the line, and agents stand ready to furnish information, and sell tickets at cheapest rates over the **Chicago, Milwaukee & St. Paul Railway.**

S. S. MERRILL, General Manager.	A. V. H. CARPENTER, Gen. Pass. and Tick. Agt.
J. T. CLARK, General Sup't.	GEO. H. HEAFFORD, Asst Gen. Pass. Agt.

## HOUSATONIC RAILROAD.

THE ONLY LINE RUNNING  
THROUGH CARS

Between New York, Great Barrington, Stockbridge, Lenox, and Pittsfield—the far-famed resorts of the

## Berkshire Hills

of Western Massachusetts—the "Switzerland of America."

Two through trains daily between New York City and all points on the Housatonic Railroad, from the Grand Central Depot via the New York, New Haven, and Hartford Railroad at 8:00 A. M. and 3:30 P. M.

Descriptive Guide-Book sent free by mail upon application to the General Ticket Agent.

H. D. AVERILL, Gen'l Ticket Agent.

W. H. YEOMANS, Superintendent.

General Offices Bridgeport, Ct. Dec. 27, 1882.

## "Progressive and Reliable."

"Under its present management,

## THE ERIE RAILWAY

is become the most progressive and reliable Trunk Line in America."—*Cleveland Leader.*

## THE ERIE

is the **SAFE and COMFORTABLE** Line between the East and West. Its equipment is unsurpassed—**Pullman Coaches, Westinghouse Air-Brake, Miller Safety Platform, Cars Lighted by Gas, Steel Rails, Double Track.**

The scenery along the line includes such great Works of Nature as **Niagara Falls, Watkin's Glen, Portage Falls and Gorge, the Great Lakes** and the **Lakes of Central and Western New York**, making it truly the "LANDSCAPE ROUTE OF AMERICA."

E. S. BOWEN, Gen. Supt., N. Y.

JNO. N. ABBOTT, Gen'l Pass'r. Agt., N. Y.

ESTABLISHED IN 1836.

## LOBDELL CAR WHEEL COMPANY,

Wilmington, Delaware.

GEORGE G. LOBDELL, President.

WILLIAM W. LOBDELL, Secretary.

P. N. BRENNAN, Treasurer.

## SAFETY RAILROAD SWITCHES,

WITH MAIN TRACKS UNBROKEN.

Railroad Crossings, Frogs, and other Railroad Supplies,

MANUFACTURED BY THE

WHARTON RAILROAD SWITCH CO.,  
PHILADELPHIA.

Works: 23d and Washington Avenue.  
Office: 28 South 3d Street.

## THE ROGERS LOCOMOTIVE AND MACHINE WORKS,

Paterson, N. J.

Having extensive facilities, we are now prepared to furnish promptly, of the best and most approved descriptions, either

COAL OR WOOD BURNING  
LOCOMOTIVE ENGINES,  
AND OTHER VARIETIES OF

Railroad Machinery.

J. S. ROGERS, Pres't.

R. S. HUGHES, Sec'y.

WM. S. HUDSON, Supt.

Paterson, N. J.

R. S. HUGHES, Treasurer,  
44 Exchange Place, New York.



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Only Rapid and Durable  
WRITING MACHINE  
Used at sight. Phonography practically taught. Situations procured for competent Students. Send for circulars. W. O. WYCKOFF, Ithaca, N. Y.

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Adopted in the offices of the principal Railroad and supply companies SIMPLE, DURABLE, NEAT.

Operated at sight, and writes FASTER and BETTER than the most expert PENMAN.

### THOUSANDS of TESTIMONIALS.

Sold under Absolute Guarantee-order, with the privilege of returning if not suited.

Wyckoff, Seamans & Benedict,

281 &amp; 283 Broadway, N. Y.

15 Chestnut, Philadelphia.

38 East Madison, Chicago.

32 Hawley, Boston.

## BETHLEHEM IRON COMPANY, IRON AND STEEL RAILS.

GEO. A. EVANS, - 74 Wall Street, N. Y.

## SWIFT'S IRON AND STEEL WORKS,

No. 26 West Third Street, - Cincinnati, Ohio.

Manufacturers of all Weights of Standard and Narrow Gauge Rails by the most approved process. Also Rail Fastenings, Steel and Bloom Boiler Plate, and Tank, Sheet, and Bar Iron.

### FROM 1-4 TO 10,000 lbs. WEIGHT.

True to pattern, sound and solid, of unequalled strength, toughness and durability.

An invaluable substitute for forgings or cast-irons requiring three-fold strength.

CROSS-HEADS, ROCKER-ARMS, PISTON-HEADS, ETC., for Locomotives.

15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running prove its superiority over other Steel Castings.

CRANK-SHAFTS, CROSS-HEADS and GEARING, specialties.

Circulars and Price Lists free. Address

## STEEL CASTINGS

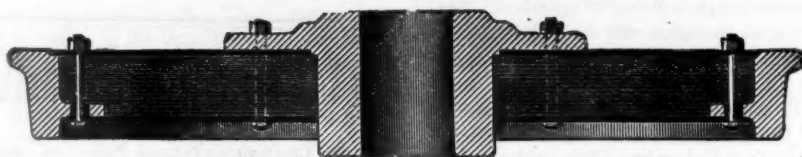
## CHESTER STEEL CASTING CO.

407 Library St., PHILADELPHIA

Works, CHESTER, Pa.

## ALLEN PAPER CAR WHEEL COMPANY,

GENERAL OFFICES: 240 BROADWAY, NEW YORK.



Manufacturers of Allen's Patent

## —PAPER CAR WHEELS,—

(ALL SIZES).

Especially adapted for Sleeping and Drawing Room Cars, Locomotive and Tender Trucks, Steel Tire, with annular web—strongest, most durable and economical wheel in use. Works at Hudson, N. Y.; and at Pullman (near Chicago) and Morris, Ill.

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## McLeod Automatic Air Railroad Signal

Will prevent Railroad Accidents and Save Life.

"The McLeod Air Signal is an ingenious and inexpensive device by which the coming of a train is announced far in advance, both by visible and audible signals." [Mass. R. R. Com. Report.]

This signal has been fully tested on the New York and New England Railroad at Dudley and Bird Streets, by practical operation and has proved a complete success, to the entire satisfaction of the many prominent Railroad men and experts who have watched and examined it. It provides an Automatic Block, Crossing, Station, Switch, Bridge, Yard and Curve Signals, Gate and Revolving Lanterns. Being operated by the weight of trains passing over an incline bar, forcing common air through a tube, by means of a bellows, which is positive in its action, highly commended by all railroad officials who examined it.

The company can shortly fill orders to place it on any railroad, and invite communication from Railroad officials from all parts.

## MCLEOD AIR RAILROAD SIGNAL CO.,

4 Pemberton Square, Boston, Mass.

New York Office with Col. Thos. R. Sharo, 115 Broadway.

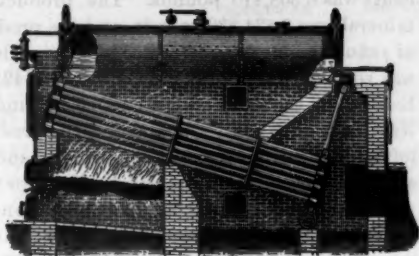


## RAILROAD EARNINGS—MONTHLY.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
<b>BURL., CEDAR RAP. &amp; NORTHERN:</b>													
1880.....	184,316	165,170	188,325	141,652	149,504	153,378	143,432	160,160	179,804	204,991	189,330	193,419	2,053,484
1881.....	167,750	124,510	148,551	184,680	105,630	205,912	174,351	209,112	221,801	257,857	202,180	232,812	2,259,037
1882.....	252,823	225,631	224,107	176,304	199,278	211,257	198,476	224,921	261,439	300,155	278,439	246,662	2,800,679
<b>CENTRAL PACIFIC:</b>													
1880.....	1,200,615	1,070,487	1,373,438	1,356,716	1,778,488	1,724,990	1,840,067	1,973,438	1,994,997	1,120,229	2,199,466	1,905,221	20,508,113
1881.....	1,602,907	1,454,218	1,709,658	1,872,370	2,091,411	2,159,382	1,899,346	2,088,519	2,185,303	2,507,857	2,297,971	2,225,179	24,094,101
1882.....	1,839,469	1,720,675	1,969,737	2,054,687	2,342,298	2,229,105	2,076,648	2,350,557	2,495,445	2,424,549	2,242,000	1,968,000	25,713,150
<b>CHESAPEAKE AND OHIO:</b>													
1880.....	202,335	198,681	222,762	221,559	199,443	214,352	238,236	259,110	247,303	211,820	240,795	218,009	2,674,308
1881.....	162,540	184,389	228,479	227,343	252,235	241,135	225,096	262,858	247,144	236,306	230,622	203,562	2,302,762
1882.....	210,455	209,708	208,981	207,454	255,939	260,753	306,831	371,175	332,219	347,882	287,850	.....	.....
<b>CHICAGO AND ALTON:</b>													
1880.....	534,054	497,013	626,473	542,961	616,128	617,524	708,906	761,190	767,349	785,199	696,776	574,695	7,718,198
1881.....	467,890	461,641	529,915	548,556	548,556	635,860	676,205	769,751	774,790	771,844	672,380	646,812	7,557,741
1882.....	570,447	530,480	584,483	561,787	553,412	613,886	671,537	800,624	881,109	812,032	748,151	699,323	8,211,988
<b>CHICAGO AND NORTHWESTERN:</b>													
1880.....	1,154,632	1,131,683	1,361,725	1,294,573	1,875,608	1,671,177	1,699,686	1,767,938	2,020,245	2,105,217	1,855,622	1,477,902	19,416,007
1881.....	1,290,664	1,240,664	1,778,795	1,474,612	1,879,006	2,306,440	1,983,032	2,315,164	2,292,676	2,341,057	2,019,038	1,855,477	21,849,209
1882.....	1,644,935	1,474,176	1,672,931	1,668,741	2,110,947	2,022,700	2,025,736	2,099,755	2,497,053	2,532,100	2,069,287	1,718,379	23,828,973
<b>CHICAGO, BURLINGTON AND QUINCY:</b>													
1880.....	1,432,740	1,411,870	1,732,518	1,489,894	1,909,627	1,682,956	1,773,643	1,834,321	1,862,285	1,934,762	1,837,860	1,552,018	20,454,494
1881.....	1,307,948	1,034,821	1,418,149	1,574,371	1,679,455	2,083,803	1,888,358	2,173,945	2,262,981	2,031,001	1,816,133	1,905,490	21,324,150
1882.....	1,658,834	1,457,300	1,566,217	1,530,838	1,505,261	1,437,164	1,625,006	2,086,858	2,186,400	2,270,444	2,199,421	.....	.....
<b>CHICAGO, MILWAUKEE AND ST. PAUL:</b>													
1880.....	764,298	738,749	900,675	871,041	1,134,745	1,037,958	1,026,708	991,297	1,257,677	1,493,620	1,472,037	1,397,308	13,086,119
1881.....	682,717	682,717	916,989	1,259,946	1,538,491	1,729,811	1,568,706	1,678,361	1,644,676	1,591,052	1,569,597	1,854,269	17,025,456
1882.....	1,435,000	1,377,000	1,561,000	1,518,000	1,629,000	1,620,000	1,465,000	1,545,000	1,950,000	2,251,000	2,072,000	1,964,000	20,386,999
<b>CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA:</b>													
1880.....	193,827	173,078	259,783	259,208	232,146	218,093	236,995	251,013	300,833	342,052	342,894	312,773	3,122,097
1881.....	257,786	158,594	251,648	261,211	359,124	404,562	383,202	385,586	373,370	379,629	392,921	432,615	3,981,209
1882.....	307,498	315,100	405,779	356,558	406,420	363,109	331,480	394,555	482,997	546,671	517,595	375,796	4,973,052
<b>CINCINNATI, INDIANAPOLIS, ST. LOUIS AND CHICAGO:</b>													
1880.....	155,697	172,541	198,220	168,199	186,995	200,332	204,138	233,478	343,627	239,881	209,014	198,252	2,412,185
1881.....	182,523	171,511	191,005	183,710	191,056	192,290	177,161	229,858	228,653	221,320	211,012	195,809	2,296,916
1882.....	200,042	186,879	208,066	204,269	199,110	195,948	209,564	.....	259,379	.....	219,732	189,956	2,645,530
<b>DENVER AND RIO GRANDE:</b>													
1880.....	124,759	126,922	160,883	164,882	193,925	295,455	373,132	400,133	406,583	473,318	408,562	349,196	3,478,007
1881.....	307,476	317,681	398,493	433,111	514,767	584,230	548,284	606,193	589,287	624,432	547,055	624,728	6,349,857
1882.....	491,914	412,987	535,055	559,917	614,298	537,462	495,797	574,040	595,306	630,598	512,965	626,728	6,349,857
<b>HAMMILL AND ST. JOSEPH:</b>													
1880.....	176,079	166,665	216,061	206,735	191,317	179,396	224,312	238,081	233,448	242,214	207,147	279,635	2,561,366
1881.....	154,401	122,874	176,356	190,812	172,950	190,740	201,899	210,240	215,103	231,913	180,376	230,661	2,303,388
1882.....	125,601	152,691	162,475	150,481	151,999	147,526	184,609	254,569	239,732	238,563	249,252	239,891	2,303,388
<b>ILLINOIS CENTRAL:</b>													
1880.....	595,212	613,806	613,008	535,732	665,120	681,736	724,095	732,755	806,836	880,211	783,180	673,182	8,304,812
1881.....	631,281	524,499	577,789	662,493	673,259	803,887	720,004	868,407	828,847	815,238	737,218	703,475	8,586,397
1882.....	746,744	697,274	686,228	640,014	674,749	663,746	752,251	813,600	828,238	865,325	752,144	697,051	8,831,281
<b>INDIANA, BLOOMINGTON AND WESTERN:</b>													
1880.....	80,498	89,690	116,185	90,374	85,733	106,954	103,438	116,732	110,622	121,343	95,621	104,619	1,233,079
1881.....	90,283	83,261	102,085	203,677	202,064	199,846	190,125	272,114	247,322	225,678	200,450	192,622	2,427,569
1882.....	195,824	175,755	206,235	205,934	182,554	186,133	206,072	278,814	273,160	269,046	256,998	205,212	2,641,675
<b>LOUISVILLE AND NASHVILLE:</b>													
1880.....	674,455	575,035	612,593	563,883	655,014	976,229	772,538	827,089	931,911	1,000,327	953,087	949,185	9,491,346
1881.....	812,118	805,124	947,959	855,704	888,726	1,227,885	817,135	876,192	951,566	1,002,950	1,065,223	1,153,779	11,344,361
1882.....	964,527	960,315	1,068,834	953,033	958,130	1,215,490	1,063,705	1,043,912	1,114,513	1,215,932	1,122,211	1,221,211	12,991,140
<b>MOBILE AND OHIO:</b>													
1880.....	250,116	204,095	168,302	140,091	129,248	121,855	131,621	140,593	184,247	264,714	251,368	287,372	2,273,622
1881.....	224,347	210,768	230,916	163,551	145,803	136,517	135,549	160,789	210,202	252,924	262,816	256,812	2,403,224
1882.....	159,676	158,590	148,166	141,957	134,378	130,184	135,174	137,475	157,874	267,433	295,110	307,643	2,179,666
<b>NASHVILLE, CHATTANOOGA AND ST. LOUIS:</b>													
1880.....	205,634	191,154	169,457	155,466	158,839	144,130	151,594	169,326	167,473	178,266	182,087	175,966	2,049,484
1881.....	178,143	190,866	207,710	183,255	104,430	154,549	150,430	168,317	179,979	172,121	152,059	173,122	2,075,943
1882.....	159,961	159,961	161,005	154,155	135,556	119,074	160,991	168,304	168,999	180,319	181,336	201,087	2,048,169
<b>NEW YORK AND NEW ENGLAND:</b>													
1880.....	164,232	149,907	183,845	179,689	183,701	219,891	205,056	249,885	235,642	215,491	210,856	198,108	2,396,302
1881.....	189,749	173,614	212,019	217,185	231,518	246,821	280,524	280,524	299,573	361,200	240,764	240,063	2,809,255
1882.....	213,840	217,261	265,222	261,044	299,722	295,392	289,441	346,490	338,347	310,145	267,183	.....	2,809,255
<b>NEW YORK, LAKE ERIE AND WESTERN:</b>													
1879.....	1,147,173	1,207,391	1,356,780	1,372,755	1,350,574	1,230,419	1,273,533	1,450,223	1,492,497	1,713,697	1,515,835	1,398,224	16,509,127
1880.....	1,296,381	1,252,218	1,644,958	1,643,151	1,592,544	1,661,812	1,580,977	1,606,874	1,786,417	1,899,910	1,799,338	1,726,788	19,149,361
1881.....	1,443,437	1,425,765	1,847,261	1,709,057	1,776,891	1,794,982	1,787,081	1,772,895	1,734,200	1,814,866	1,715,469	.....	.....
<b>NORTHERN CENTRAL:</b>													
1880.....	334,494	330,860	415,325	386,130	329,788	419,193	450,208	453,923	464,093	512,918	459,054	494,310	5,050,387
1881.....	386,157	382,657	452,906	407,273	405,588	487,287	440,811	498,008	429,505	449,664	487,160	476,622	5,443,697
1882.....	407,368	413,551	430,194	435,129	482,607	482,752	509,683	667,488	592,435	550,225	526,685	490,003	5,800,176
<b>NORTHERN PACIFIC:</b>													
1880.....	81,390	77,259	119,357	185,700	217,613	253,105	241,277	223,500	330,300	358,456	300,822	290,993	2,629,710
1881.....	116,508	78,803	162,984	216,210	312,705	412,014	393,260	434,085	534,363	583,555	475,610	439,724	4,044,576
1882.....	245,369	268,935	373,141	451,023									

Marked thus(*) are leased roads.	Stock out-standing.	Divide'd Periods.	Last Dividend Payable.	Marked thus(*) are leased roads.	Stock out-standing.	Divide'd Periods.	Last Dividend Payable.	Marked thus(*) are leased roads.	Stock out-standing.	Divide'd Periods.	Last Dividend Payable.	Marked thus(*) are leased roads.	Stock out-standing.	Divide'd Periods.	Last Dividend Payable.
Albany and Susq*...100	2,500,000	semi-an	Jan. '83	Little Miami..... 50	4,637,300	q'terly	Dec. '82	Ware River*.....100	750,000	semi-an.	Jan. '83 3/4	Warren (N. J.).....100	1,200,000	semi-an.	Oct. '82 3/4
Ach., Top. and E. Ferro	54,000,000	q'terly	Feb. '83 1/4	Little Rock & Ft. S..... 50	2,466,135	semi-an.	July '81 108	Warwick Valley.....100	800,000	semi-an.	Oct. '82 3/4	West Chester & Phil. pref. 100	821,300	semi-an.	July '82
Atlanta and W. Point	1,232,200	semi-an	Aug. '82	Little Schuylkill..... 50	2,046,100	semi-an.	Jan. '83 3/4	West Jersey.....100	1,359,750	semi-an.	Sept. '83	Wilming'ton & W. N. Y. 100	1,456,200	semi-an.	Jan. '83
Atlantic and St. Law*	5,840,000	semi-an	Sept. '82	Long Island..... 50	10,000,000	q'terly	Feb. '83	Wil., Col., & Aug. 100	960,000	semi-an.	Jan. '83 3/4	Winchester & Potomac* 100	180,000	semi-an.	Jan. '83
Augusta and Savannah	1,082,900	semi-an	Dec. '82 3/4	Louisville & Nashv. 100	25,000,000	semi-an.	Feb. '82	Winchester & Strasb. 100	74,700	semi-an.	Jan. '83	Worcester & Nashua. 75	1,789,800	semi-an.	Jan. '83 1/4
Avon, Genesee & Mth* 100	225,000	semi-an	Jan. '83	Lowell & Andover..... 100	500,000	semi-an.	Jan. '83 3/4								
Baltimore and Ohio* 100	14,792,566	semi-an	Nov. '82	Lykens Valley..... 100	600,000	q'terly	Jan. '82 2 1/2								
" " pref. 100	5,000,000	semi-an	Jan. '83	Maine Central..... 100	3,603,300	semi-an.	Feb. '82 1/2								
Washington Br..... 100	1,650,000	semi-an	Nov. '82	Manchester & Law. 00	1,000,000	semi-an.	Nov. '82								
Berkshire..... 100	600,000	q'terly	Apr. '82 1/4	Manhattan..... 100	13,000,000	q'terly	Jan. '83 1/4								
Boston and Albany..... 100	20,000,000	q'terly	Dec. '82	" " 1st pref. 100	6,500,000	q'terly	Jan. '83 1/4								
Bos. & N. Y. Air Line pf. 100	2,795,227	q'terly	June '82	" " 2d pref. 100	6,500,000	q'terly	Jan. '83 1/4								
Bos., Cl. & F. N. B. pref. 100	1,750,100	semi-an	Oct. '82 3/4	Marq. Hout. & Ont. 100	2,306,600	q'terly	Feb. '83								
Bos., Conc. & Mont. pf. 100	800,000	semi-an	Nov. '82	" " pref. 100	2,259,026	semi-an.	Feb. '83								
Boston and Lowell..... 100	3,040,000	semi-an	Jan. '83 1/4	Massachusetts..... 100	400,000	semi-an.	Feb. '83								
Boston and Maine..... 100	6,021,274	semi-an	Nov. '82	Metropolitan..... 100	6,500,000	q'terly	Oct. '82 1/4								
Boston & Providence..... 100	4,000,000	semi-an	Nov. '82	Michigan Central..... 100	18,738,204	q'terly	Feb. '82								
Attleborough Br..... 100	131,700	semi-an	Jan. '83 3/4	Middlesex Central..... 100	280,000	semi-an.	Feb. '83								
Bos., Revere & Lynn 100	419,400	semi-an	Jan. '83	Mill Creek & Minehill* 50	323,000	semi-an.	Jan. '83								
Buffalo, N. Y. & Erie* 100	950,000	semi-an	Dec. '82	M. Hill & Schuyl. Hav* 50	4,022,500	semi-an.	Jan. '83 3/4								
Buff., Pitts. & West. pf. 50	1,457,000	q'terly	Jan. '83	Mission Pacific..... 100	28,160,800	q'terly	Jan. '83 1/4								
Camden & Atlantic..... 50	377,400	q'terly	Nov. '82	Mobile & Montgomery 100	3,022,517	semi-an.	Feb. '82 1/4								
" " pref. 50	880,650	q'terly	Nov. '82	Morris and Essex..... 100	15,000,000	semi-an.	Jan. '83 3/4								
Camden & Burl. Co. 100	381,925	semi-an	Jan. '83	Mt Carbon & P. Carbon 50	282,350	semi-an.	Jan. '83								
Canada Southern..... 100	15,000,000	q'terly	Feb. '81 2 1/2	Nashua and Lowell..... 100	800,000	semi-an.	Nov. '82								
Cape May & Millville* 50	447,000	annual	Dec. '82	Nashua & Rochester..... 100	1,305,800	semi-an.	Oct. '82 1/4								
Catawissa..... 100	1,159,500	annual	Dec. '82 1/2	Nashv. & Decatur..... 100	1,827,000	semi-an.	June '82								
" " pref.															

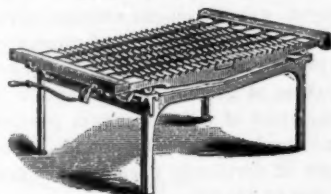


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116 James Street, Glasgow.

**W. RYDER'S**  
**PATENT**  
**Practical Shaking Grate Bar,**

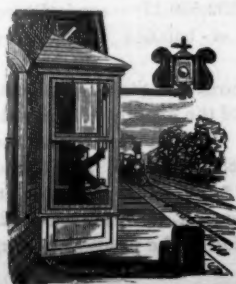
OFFICE: 134 Water Street,  
New York.



The W. Ryder Double-Acting Grate Bars are so constructed as to rest upon a frame with friction rollers, and by means of a lever attached to the front rocking bar, a reverse or reciprocal motion is produced in each bar which effectually breaks up the clinkers, and removes all the ashes from the bottom of the furnace.

By this means we get the largest percentage of circulation of air, which keeps the bars cool and prevents them from burning or warping. There is also fully ten per cent of fuel saved, as it does away with the necessity of opening the furnace door and shaking the fire, and thus preventing large volumes of cold air rushing in and producing sudden expansions and contractions, frequently blistering the bottom of the boiler.

This bar has two very superior qualities which no shaking grate ever possessed. The first is a large friction roller at each end of the bar, thus enabling it to be moved back and forth with the greatest ease, though the bar be ever so large and heavy. The second is the header at the end of every bar, thus absolutely protecting the bar from all obstructions of coal and clinkers, that otherwise might get at the end of the bar and stop its working. This header also affords plenty of expansion and contraction room for the bars. The first set of these bars ever made has been in constant use for some four and one-half years, without any expense except first cost, and the party using them prefers them to any other bar in use.



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**PATENT**  
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**CAR**  
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for TAPPING and putting in STAY BOLTS, etc., etc.

**THE**  
**SHEFFIELD VELOCIPEDE HAND CAR.**



In use on nearly every Railroad in the Country.

Runs easily; is durable, and capable of high speed, and either as shown or when arranged for carrying two persons, constitutes the very best device for close inspection of track ever offered to the railroad public.

**Sheffield Velocipede Car Co.**

Three Rivers, Mich.

## FINANCIAL DEPARTMENT.

## OUR NATIONAL COINAGE.

THE designers of coins at our national mints appear to have been unfortunate for many years in the selection of designs for our coinage. The time was, half a century ago, when American coins were really attractive in appearance, but lately the reverse has been the case, and the United States coins are conspicuous for the absence of taste on the part of the designing artist. The copper cent is almost the only handsome coin we can boast. The diminutive doll-like figures on our half and quarter dollars, dimes and half-dimes, are utterly without beauty, while the standard silver dollar with the awkward disproportionate eagle on the reverse is about as ugly a coin as could be conceived. There is a natural fitness in its nick-name, the "buzzard dollar." Our gold coins are little better, and it seems to be a settled belief on the part of our designers that the Goddess of Liberty is an uncompromising old maid, from the rigidity and sternness of countenance they have always given her. As to producing a coin with some other design than that of our presiding deity, such an idea would seem rank heresy to their devout and artistic minds.

But apart from the lack of beauty in our coins, there is a lack of individuality which creates constant confusion and permits of ready fraud. The truth of this assertion is strikingly exemplified in the recent coinage of the new nickel five-cent piece. There is positively nothing about the coin to indicate its denomination beyond the Roman numeral "V" upon the reverse the word "cent" being omitted. So nearly does this coin resemble our five dollar gold piece in size, obverse design and weight, that shrewd swindlers would find little difficulty in giving it a thin coating of gold and passing it off for a half-eagle upon ignorant and unsuspecting persons. Foreigners on seeing the "V" and observing the size, weight and apparent metal of the coin would readily accept it as a genuine half-eagle. This opportunity for fraud has been recognized by the Treasury Department, and the entire issue of the new five-cent piece is to be withdrawn from circulation, official orders to that effect being given a few days after its delivery from the mint. Everyone remembers the confusion attendant upon the circulation of the twenty-cent piece, which was exactly similar in design to the quarter-dollar differing but slightly therefrom in size and weight, and distinguishable only by the absence of milling on the edge, and the words "twenty

cents" in diminutive letters on the reverse. Many a person can recall with a pang, their payment of a two dollar and-a-half gold piece in mistake for a copper cent fresh from the mint, and careless people in moments of haste have even mistaken half for quarter-dollars and *vice versa*. We have often heard Americans complain of the similarity of British gold coins, the sovereigns and half-sovereigns being of an exactly similar design, bearing no mark or sign of denominational value, and consequently liable to be mistaken for each other, particularly by our own people, who have been unused to gold in common circulation, but there is quite as much cause for complaint at home. There is no reason why we could not possess specie both handsome in design and of denominational distinctness, but if this dual achievement is beyond the power of our coin architects, we would sacrifice beauty for utility and have the distinctness alone. What we do object to most strenuously is the absence of both of these attributes.

It would seem feasible to coin specie with a general design common to all the denominations, yet differing in detail sufficiently to insure instant recognition, or to go even farther yet and give each denomination its separate and distinct design; and there is furthermore no reason why each coin should not have its denomination plainly indicated upon *both* sides and not upon one only as appears to be the universal practise with nearly all European nations as well as our own. In this regard we might adopt the custom prevalent in China, Japan and other Asiatic countries and punch holes in our coins, varying in size, shape and number to indicate respective values. Almost any change in our coinage designs would be for the better, and if any modification is contemplated it would be well to make the change a radical one, giving us coins at once handsome in appearance and possessing conspicuous and distinct signs for every denominational value.

## Financial Review.

WEDNESDAY EVENING, FEBRUARY 21, 1883.

The rate for call loans during the forenoon on stocks as collaterals was  $3\frac{1}{2}$  per cent, and on Governments 3 per cent; in the afternoon the rate was 2 per cent on call on stocks.

The posted rates for foreign exchange were 4.83 and 4.83 $\frac{1}{2}$  and 4.86@4.86 $\frac{1}{2}$ . The actual rates were as follows: Sixty days, 4.82 $\frac{1}{2}$ @ $\frac{1}{2}$ ; demand, 4.85 $\frac{1}{2}$ @ $\frac{1}{2}$ ; cables, 4.86@4.86 $\frac{1}{2}$ . Commercial bills were 4.81@4.81 $\frac{1}{2}$ . Continental bills were as follows, viz: France, 5.22 $\frac{1}{2}$ @5.21 $\frac{1}{2}$  and 5.19 $\frac{1}{2}$ @5.18 $\frac{1}{2}$ ; reichsmarks, 94 $\frac{1}{2}$ @ $\frac{1}{2}$  and 95@95 $\frac{1}{2}$ ; guilders, 39 $\frac{1}{2}$  and 40 $\frac{1}{2}$ .

The report of the Quincy Mining Company of Michigan shows that the tons of rock hoisted during the year 1882 amounted to 109,751.

The total stamp rock treated was 101,327 tons, and the yield of stamp rock treated (3.21 per cent) was 6,508,410 pounds. The product of mineral was 6,874,230 pounds, and the product of refined copper was 5,682,663 pounds. There was realized from the sale of silver \$3,142.83. Estimating the value of the copper on hand in New York at 18 cents a pound and the product left over at the mine at 81 per cent yield and 15 cents per pound, the gross sum realized for the year's product was \$973,506.10. The running expenses at the mine were \$381,010.82; building and construction account, \$63,427.63; smelting, transportation, and all other expenses, \$96,969.13—total expenses, \$541,407.58. The net mining profit for the year was \$432,098.52; realized during the year from interest and profit on sale of company's stock, \$16,455.33—total earnings, \$448,553.85. The balance on hand January 1, 1882, was \$735,313.79. On February 20, 1882, a dividend was paid of \$320,000, and on August 21 one of \$200,000, which left a balance of assets January 1, 1883, of \$663,867.64. A dividend of \$6 per share, or \$240,000, was declared payable February 15, 1883. During the past year the average force employed was 438 men; average number of miners, 152; average wages of miners on contract per month, \$48.83. The yield of mineral per fathom of ground broken was 970 pounds, and the yield of refined copper per fathom of ground broken was 800 pounds. The total amount of dividends declared to January 1, 1883, was \$3,330,000.

The question as to whom payment should be made on called Government bonds, which bonds had been bequeathed to a person for life with succession to parties specified, has just been decided by the First Comptroller of the Treasury at Washington. A testator bequeathed certain bonds to his daughter for her use during her life, and after her death to her children, or in default of these to parties specified. The bonds became due, and the daughter asked the Secretary of the Treasury to whom payment should be made. The inquiry was referred to the Comptroller, who holds that payment must be made to a trustee appointed by the proper court of equity on a trust to invest the proceeds of the bonds, pay the profits to the daughter during her life, to preserve the fund, and on her death to pay it over to the final legatee.

The earnings of the Kingston and Pembroke Railway during the year 1882 were: from passengers and mails \$29,265.38, and from freight \$96,796.86, a total of \$126,062.24; the expenses during the same time were \$100,484.19—leaving a profit of \$25,578.05. The earnings for 1881 were \$76,061.79; expenditure, \$60,349.98; balance, \$15,711.81. The cash receipts for 1882 were \$832,550.17; expenditure, \$831,967.80, leaving a balance in hand of \$582.37.

The Chief of the Bureau of Statistics reports that the total values of the exports of domestic breadstuffs from the United States during the month of January, 1883, were \$15,874,286, and during January, 1882, \$11,977,524; for the seven months ended January 31, 1883, \$133,696,842, and for the same period of the preceding year, \$124,121,439.



## Statement of the Public Debt of the United States, February 1, 1883.

DEBT BEARING INTEREST.		
	Amount Outstanding.	Accrued Interest.
5 per cent funded loan of 1881, continued at 3½ per cent. ....	\$81,328,750 00	\$711,626 56
3 per cent loan of July 12, 1882. ....	291,444,350 00	2,185,832 62
4½ per cent funded loan of 1891. ....	250,000,000 00	1,875,000 00
4 per cent funded loan of 1907. ....	738,967,800 00	2,463,226 00
4 per cent refunding certificates. ....	389,150 00	1,397 17
3 per cent navy pension fund. ....	14,000,000 00	35,000 00
Aggregate of debt bearing interest. ....	\$1,376,130,050 00	\$7,271,982 35
Interest due and unpaid. ....		2,433,368 57
DEBT ON WHICH INTEREST HAS CEASED SINCE MATURITY.		
	Amount Outstanding.	Interest due and unpaid.
to 6 per cent. old debt, 1837. ....	\$57,665 00	\$64,174 81
5 per cent. Mexican indemnity stock, 1846-52. ....	1,104 91	85 74
6 per cent. bonds, 1847-67. ....	1,250 00	22 00
6 per cent. bounty land scrip, 1847-49. ....	3,275 00	213 06
5 per cent. Texas indemnity stock, 1850-64. ....	20,000 00	2,945 00
5 per cent. bonds, of 1858-74. ....	7,000 00	875 00
5 per cent. bonds, of 1860-71. ....	10,000 00	600 00
6 per cent. 5-20 bonds, 1862, called. ....	361,550 00	5,297 15
6 per cent. 5-20 bonds, June 1864, called. ....	50,400 00	994 40
6 per cent. 5-20 bonds, 1865, called. ....	70,450 00	18,335 45
5 per cent. 10-40 bonds, 1864, called. ....	280,100 00	41,926 40
6 per cent. Consol. bonds, 1865, called. ....	358,200 00	11,917 38
6 per cent. Consol. bonds, 1867, called. ....	789,300 00	108,676 65
6 per cent. Consol. bonds, 1868, called. ....	245,150 00	20,413 11
6 per cent. loan, Feb. 8, 1861, matured Dec. 31, 1880. ....	75,000 00	4,830 00
5 per cent. funded loan 1881, called. ....	547,200 00	869 54
5 per cent. funded loan 1881, called, continued at 3½ p.c. Oregon War Debt, March 2, 1861, matured July 1, 1881. ....	7,675,900 00	46,315 18
6 per cent. loan of July 17 and Aug. 5, 1861, matured June 30, 1881. ....	7,800 00	1,558 50
6 per cent. loan of July 17 and Aug. 5, 1861, continued at 3½ per cent. called. ....	474,650 00	7,813 50
6 per cent. loan of March 3, 1863, matured June 30, 1881. ....	1,499,700 00	18,079 04
6 per cent. loan of March 3, 1863, continued at 3½ per cent. called. ....	149,600 00	4,011 13
1-10 to 6 per cent. Treasury notes, prior to 1846. ....	1,396,550 00	15,273 55
1-10 to 6 per cent. Treasury notes, 1846. ....	82,525 35	2,668 06
6 per ct. Treasury notes, 1847. ....	5,900 00	200 60
3 to 6 per cent. Treasury notes, 1857. ....	950 00	57 00
6 per ct. Treasury notes, 1861. ....	1,700 00	99 00
7 3-10 per cent. 3 years' Treasury notes, 1861. ....	3,000 00	304 50
5 per cent. 1 year notes, 1863. ....	16,300 00	1,104 43
5 per cent. 2 year notes, 1863. ....	41,115 00	2,607 85
6 per ct. compound interest notes, 1863-64. ....	32,300 00	1,587 30
7 3-10 per cent. 3 years' Treasury notes, 1864-65. ....	216,770 00	44,321 01
6 per cent. certificates of indebtedness, 1862-63. ....	138,350 00	20,331 38
4 to 6 per cent. temporary loan, 1864. ....	4,000 00	253 48
3 per cent. certificates, called. ....	2,960 00	244 19
	5,000 00	394 31
Aggregate of debt on which interest has ceased since maturity. ....	\$14,632,715 26	\$448,919 50
DEBT BEARING NO INTEREST.		
Demand notes, 1861-62. ....	\$59,250 00	
Legal tender notes, 1862-63. ....	346,681,016 00	
Certificates of Deposit. ....	12,490,000 00	
Gold certificates, 1863 and 1882. ....	72,776,940 00	
Silver certificates, 1878. ....	72,745,470 00	
Unclaimed interest. ....		\$4,619 96
Fractional currency, 1862, 1863 and 1864 \$15,394,027 17		
Less amount estimated as lost or destroyed, act of June, 21, 1879. ....	8,375,934 00	
Aggregate of debt bearing no interest. ....	7,018,093 17	
Aggregate of debt bearing no interest. ....	\$511,770,769 17	\$4,619 96

## RECAPITULATION.

	Amount Outstanding.	Interest.
Debt bearing interest in coin, viz:		
Bonds at 5 per cent, continued at 3½ per cent. ....	\$81,328,750 00	
Bonds at 4½ per cent. ....	250,000,000 00	
Bonds at 4 per cent. ....	738,967,800 00	
Bonds at 3 per cent. ....	291,444,350 00	
Refunding certificates. ....	389,150 00	
Navy pension fund, 3 p.c. ....	14,000,000 00	
	\$1,376,130,050 00	\$4,705,350 92
Debt on which interest has ceased since maturity. ....	14,632,715 26	448,919 50
Debt bearing no int., viz:		
Old demand and legal-tender notes. ....	\$346,740,266 00	
Certificates of deposit. ....	12,490,000 00	
Gold & silver certificates. ....	145,522,410 00	
Fractional currency. ....	7,018,093 17	
	\$511,770,769 17	
Unclaimed interest. ....		4,619 96
	\$1,902,533,534 43	\$10,158,890 38
Total debt, principal and interest to date, including interest due and unpaid. ....		\$1,912,692,424 81
AMOUNT IN TREASURY.		
Interest due and unpaid. ....	\$2,433,368 57	
Debt on which interest has ceased. ....	14,632,715 26	
Interest thereon. ....	448,919 50	
Gold and silver certificates. ....	145,522,410 00	
U. S. notes held for redemption of certificates of deposit. ....	12,490,000 00	
Cash balance available Jan. 1, 1883. ....	143,258,218 51	
	\$318,785,631 84	
Debt, less am't in Treas'y Feb. 1, 1883. ....	\$1,593,906,792 97	
Debt, less am't in Treasury Jan. 1, 1883. ....	1,607,543,676 84	
Decrease of debt during the month. ....	\$13,636,883 87	
Decrease of debt since June 30, 1882. ....	\$95,007,667 75	
BONDS ISSUED TO THE PACIFIC RAILROAD COMPANIES, INTEREST PAYABLE IN LAWFUL MONEY.		
	Amount Outstanding.	Accrued Interest not paid.
Central Pacific bonds, 1862-64. ....	\$25,885,120 00	\$129,425 60
Kansas Pacific bonds, 1862-64. ....	6,303,000 00	31,515 00
Union Pacific bonds, 1862-64. ....	27,236,512 00	136,182 56
Cent. Branch Union Pacific bonds, 1862-64. ....	1,600,000 00	8,000 00
West'n Pacific Bonds, 1862-64. ....	1,970,560 00	9,582 80
Sioux City & Pacific bonds, 1862-64. ....	1,628,320 00	8,141 60
Totals. ....	\$64,623,512 00	\$323,117 56
Interest paid by the United States, \$57,283,388.10; interest repaid by transportation of mails, &c., \$16,317,578.67; interest repaid by cash payments: 5 per cent net earnings, \$655,198.87; balance of interest paid by United States, \$40,310,610.56.		
The foregoing is a correct statement of the public debt, as appears from the books and Treasurer's returns in the Department at the close of business, January 31, 1883.		
CHARLES J. FOLGER,		
Secretary of the Treasury.		

## THE STOCK EXCHANGES AND MONEY MARKET.

## New York Stock Exchange.

Closing Prices for the week ending Feb. 20.

	W. 14. Th. 15. F. 16. Sat. 17. M. 19. Tu. 20.
Adams Express. ....	135 133½ 135
Albany and Susq. ....	128 128 128
1st mortgage. ....	100 100 100
2d mortgage. ....	110 110 110
American Express. ....	90½ 90½ 91 91 90½
Burl. C. R. & Nor. ....	80½ 80½ 81½ 81½ 80½
1st mortgage 5s. ....	100½ 100½ 100½ 100½ 100½
Canada Southern. ....	66½ 66 65½ 65½ 64½ 64½
1st mortgage guar. ....	94½ 94½ 94½ 94½ 94
Canadian Pacific. ....	60 59½ 59½ 59½ 59½ 59½
Central of N. Jersey ....	7½ 7½ 7½ 7½ 66½ 68½
1st mort. 1890. ....	110 110 110 110 109½
7s. consol. ass. ....	110 110 110 110 110½
7s. convertible ass. ....	110 110 110 110 110½
7s. Income. ....	106 106 106 106 105½
Adjustment. ....	106 106 106 106 105½
Central Pacific. ....	80½ 80½ 80½ 80½ 79½ 79½
6s. gold. ....	114 113½ 113½ 113½ 113½
1st M. (San Joaquin) ....	114 113½ 113½ 113½ 113½
1st M. (Cal. & Or.) ....	104½ 104½ 104½ 104½ 104½
Land grant 6s. ....	104½ 104½ 104½ 104½ 104½
Chicago & Ohio. ....	31 30 30 30 30 30
1st pref. ....	23 23 23 23 23 23
2d pref. ....	23 23 23 23 23 23
1st mort., series B. ....	90½ 90 90 90½ 90½ 90½
Chicago and Alton. ....	130½ 130½ 130½ 130½ 130
Preferred. ....	141½ 141½ 141½ 141½ 141½
1st mortgage. ....	114 114 114 114 114
Sinking Fund. ....	114 114 114 114 114

Chi., Bur. & Quincy 118½ 118½ 118½ 118½ 118½	
7s. Consol. 1903. ....	126½ 126½ 126½ 126½ 126½
Chi., Mil. & St. Paul 100½ 100½ 100½ 100½ 98½ 98½	
Preferred. ....	118 117½ 117½ 117½ 117
1st mortgage, 8s. ....	120½ 120½ 120½ 120½ 120½
2d mort., 7 3-10s. ....	120½ 120½ 120½ 120½ 120½
7s. gold. ....	121 121 121 121 121
1st M. (La. C. div.) ....	117½ 117½ 117½ 117½ 117½
1st M. I. & M. div. ....	119 119 119 119 119
1st M. (I. & D. ext.) ....	119 119 119 119 119
1st M. (H. & D. div.) ....	123 123 123 123 123
1st M. (C. & M. div.) ....	123 123 123 123 123
Consolidated S. F. ....	123 123 123 123 123
Chi. & Northwestern 130 129½ 129½ 129½ 128½ 129	
Preferred. ....	143½ 143½ 144 144 143½ 143½
1st mortgage. ....	105 105 105 105 105
Sinking Fund 6s. ....	114 114 114 114 114
Consolidated 7s. ....	131 131 131 131 131
Consol. Gold bonds 125 125 125 125 125	
Do. reg. ....	124½ 124½ 124½ 124½ 124½
Chi., R. Isl. & Pac. 121½ 121½ 121½ 121½ 120½ 120½	
6s. 1917, C. ....	121½ 121½ 121½ 121½ 121½
Clev., Col., Cin. & Ind. 74½ 74 73½ 70 70 69½	
Clev. & Pittsburgh gr. 7s. Consolidated. ....	125 125 125 125 125
4th mortgage. ....	125 125 125 125 125
Col., Chi. & Ind. Cent 5½ 5 5 5 5 5	
1st mortgage. ....	106 106 106 106 106
2d mortgage. ....	106 106 106 106 106
Del. & Hud. Canal. 105½ 106 106½ 106½ 106½ 106	
Reg. 7s. 1891. ....	114 114 114 114 114
Reg. 7s. 1884. ....	103½ 103½ 103½ 103½ 103½
7s. 1894. ....	103½ 103½ 103½ 103½ 103½
Del., Lack. & Western 119½ 118½ 118½ 119½ 118½ 119½	
2d mortgage 7s. ....	121 121 121 121 121
Consol. 1907. ....	121 121 121 121 121
Erie Railway. ....	121 121 121 121 121
1st mortgage. ....	121 121 121 121 121
2d mort. 5s. ext. ....	121 121 121 121 121
3d mortgage. ....	103½ 103½ 103½ 103½ 103½
4th mort. 5s. ext. ....	109 109 109 109 109
5th mortgage. ....	129½ 129½ 129½ 129½ 129½
7s. Consol. gold. ....	129½ 129½ 129½ 129½ 129½
Great West. 1st mort 104½ 104½ 104½ 104½ 104½	
2d mortgage. ....	100½ 100½ 100½ 100½ 100½
Hannibal & St. Jo. ....	42½ 42 42 42 42
Preferred. ....	84½ 84 84 84 84
8s. Convertible. ....	108 108 108 108 108
Houston & Tex. Cen 1st mortgage. ....	73 73 73 73 73
2d mortgage. ....	107½ 107½ 107½ 107½ 107½
Illinois Central. ....	144½ 144½ 144½ 143½ 143½
Lake Shore & Mich. So 103½ 107½ 107½ 107½ 107½	
Consol. 7s. ....	107 107 107 107 107
Consol. 7s. reg. ....	107 107 107 107 107
2d Consolidated. ....	107 107 107 107 107
Lsh. & W. B. con. ass 104½ 105 104 104 104	
Long Dock bonds. ....	119 119 119 119 119
Louisville & Nash. 54½ 52½ 52½ 52½ 51½ 51½	
7s. Consol. reg. ....	50 47 48 46½ 46½
Manhattan. ....	50 47 48 46½ 46½
1st pref. ....	108 108 108 108 108
Met. Elevated. ....	83½ 84 84 84 84
1st mortgage. ....	97½ 97½ 97½ 97½ 97½
Michigan Central. 94½ 92½ 93½ 92½ 90½ 90½	
7s. 1908. ....	125 125 125 125 124½
Morris & Essex. ....	122 122 122 122 121
1st mortgage. ....	135 135 135 135 135
2d mortgage. ....	135 135 135 135 135
7s. of 1871. ....	135 135 135 135 135
7s. Convertible. ....	135 135 135 135 135
7s. Consolidated. ....	135 135 135 135 135
N. Y. Cen. & Hud. R. 125½ 125½ 124½ 124½ 124½ 124½	
6s. S. F. 1883. ....	125½ 125½ 125½ 125½ 125½
6s. S. F. 1887. ....	125½ 125½ 125½ 125½ 125½
1st mortgage. ....	130 130 130 130 130
1st mortgage, reg. ....	130 130 130 130 130
N. Y. Elevated. ....	105 105 105 105 105
1st mortgage. ....	105 105 105 105 105
N. Y. & Harlem. ....	100 100 100 100 100
Preferred. ....	130 130 130 130 130
1st mortgage. ....	130 130 130 130 130
N. Y. Lake Erie & W 36½ 36½ 34½ 35½ 34½ 34½	
Preferred. ....	75 75 75 75 75
2d Consolidated. ....	95 94½ 94½ 95 94½ 92½
New 2d 5s fund. ....	93½ 93½ 93½ 93½ 93½
N. Y., N. Hav'n & Hart 17½ 17½ 17½ 17½ 17½	
North Mo. 1st mort 119½ 119½ 119½ 119½ 119½	
Northern Pacific. ....	47½ 46½ 46½ 45½ 45½
Preferred. ....	82½ 81½ 81½ 81½ 80½
Ohio & Mississippi. 29 31½ 31½ 31½ 31½ 31½	
Preferred. ....	96 96 96 96 96
2d mortgage. ....	124½ 124½ 124½ 124½ 124½
Consolidated 7s. ....	124½ 124½ 124½ 124½ 124½
Consol. S. Fund. ....	116 116½ 116½ 116½ 116½
Pacific Mail S. S. Co 41½ 41½ 41½ 41½ 40½ 40	
Pacific R. R. of Mo. ....	105½ 105½ 105½ 105½ 105½
1st mortgage. ....	105½ 105½ 105½ 105½ 105½
2d mortgage. ....	105½ 105½ 105½ 105½ 105½
Panama. ....	124½ 124½ 124½ 124½ 124½
Phila. & Reading. ....	54 53½ 51½ 51½ 50½ 50½
Pitts. Ft. W. & Chi. gtd 1st mortgage. ....	133 133 133 133 133

ad mortgage.....	133%	133%			
3d mortgage.....					
Pullman Palace Car	121	121%	121%	120	119%
Quickell's Min'g Co	81				
Preferred.....	41				
St. Louis & San Fran	29%	30			
Preferred.....	50	49%	48%		
1st Preferred.....			91	90	
St. L., Alt'n & T. H.	67	67	66	66%	65
Preferred.....	67				64
1st mortgage.....					
2d mort. pref.....					
Income bonds.....			105		
St. L., Iron Mt. & S.					
1st mortgage.....					108%
2d mortgage.....					
Toledo and Wabash.					105%
1st mortgage.....					
2d mortgage.....					
7th, Consolidated.....		97%	96		
St. Louis Division			102		
Union Pacific.....	93%	93	93%	94%	93
1st mortgage.....	113%	113%	114	114	113%
Land Grant 7th.....	109				
Sinking Fund 8th.....	118%	118%	118%	118%	118%
United States Ex.....		63	63%		62
Wabash, St. L. & Pac	30%	29%	28%	28%	28%
Preferred.....	30%	49%	49	48%	46%
New mort. 7th.....					
Wells-Fargo Ex.....		124%			123
Western Pacific b'ds					
Western Union Tel.	31%	80%	80%	80%	80%
7th, S.F. conv., 1900					
FEDERAL STOCKS:—					
U. S. 4th, 1907, reg.....			119%		
U. S. 4th, 1907, coup.....	120				119%
U. S. 4th, 1891, reg.....	112%		112%		112%
U. S. 4th, 1891, coup.....			113%		
U. S. 5th, cont'd at 3%					
U. S. 3rd, reg.....	104	104			104%
Dt. of Col. 3-6th, reg.....					
Dt. of Col. 3-6th, coup.....					108%

## Boston Stock Exchange.

Closing Prices for the Week Ending Feb. 20.

W. 14. Th. 15. F. 16. Sat. 17. M. 19. Tu. 20.

Atch., Top. & San. Fe.	80%	79%	79%	79%	79%	79%
1st mortgage.....						120%
Land Grant 7th.....						113
Boston & Albany.....	175	175%	175%	175%	175	175
Boston and Lowell.....			97			
Boston & Maine.....	155%	155%				155%
Boston & Providence.....						
Bos'n, Hart. & Erie 7th						
Burl. & Mo. R. L. G. 7th						
Burl. & Mo. R. in Neb						
6th, exempt.....						
4th.....	81					
Chi., Burl. & Quincy	118%	118%	118%	118%	117%	117
Cin., Sand & Clev. (\$50)			22%			
Concord (\$50).....						101%
Connecticut River.....						
Eastern.....	46%	46	46%	46%		46
New 6th, Bond.....			109%			
Fitchburg.....	119		119			117%
N. Y. & New England	46%	45%	46	46		45%
7th.....	115	115	114%			
Northern N. H.....	111	111				111
Norwich & Worcester.....						
Ogden & Lake Cham						
Old Colony.....	136			136		135%
Ph., Wil. & Balt. (\$50)						
Portl'd, Saco & Ports	112%					
Pueblo & Ark Val 7th			113%	113		113
Pullman Palace Car	122	121%	121%	121		120
Union Pacific.....	92%	93%	93%	94%	92%	93%
6th.....	113					112%
Land Grant 7th.....						
Sinking Fund 8th.....						
Vermont & Mass.....						
Worcester & Nashua						
Cambridge (Horse).....						
Metropolitan (Horse).....	70					
Middlesex (Horse).....						
Cal. & Hecla Min'g Co	243	242	243	243	242%	
Quincy.....	50%	50%	50%	50%	50	50

## Philadelphia Stock Exchange.

Closing Prices for the Week Ending Feb. 20.

W. 14. Th. 15. F. 16. Sat. 17. M. 19. Tu. 20.

Allegh'y Val. 7 3/4	108					
7th, Income.....	45	47				47
Buff., Pitts. & West.	16%	16%	15%	15%	15%	
Camden & Am. 6th, '83						
6th, 1889.....						

Mort. 6th, 1889.....						
Camden & Atlantic.....						
Preferred.....						
1st mortgage.....						
2d mortgage.....						
Catawissa.....						
Preferred.....						
2d pref.....	55					
7th, new.....						
Del. & Bound Brook						
7th.....	125					
Elmira & Williamsport						
Preferred.....						
Hunt. & B. Top Mt.						
Preferred.....						
2d mortgage.....						
Lehigh Navigation.....	39	38%	38%	38%	38%	38%
6th, 1884.....	102%		102%			
Gold Loan.....						112
Railroad Loan.....						116%
Conv. Gold Loan.....						
Consol. Mort. 7th.....			118%			
Lehigh Valley.....	65	65	64%	64%	64	
1st mort. 6th, coup.....		122				
1st mort. 6th, reg.....						
2d mort. 7th.....	135					
Consol. mort. 6th.....						
Consol. mtg. 6th, reg.....	123%					
Little Schuylkill.....						
Minehill & Sch. Hav'n						
North Pennsylvania	67			67		
1st mortgage 6th.....						
2d mortgage 7th.....				121		
Genl. mtg. 7th, coup.....						
Genl. mtg. 7th, reg.....						
Northern Central.....	55	55%	54%		54%	
5th.....		100			100	
Northern Pacific.....	47	46%	46%	46%	45%	45%
Preferred.....	82%	82%	81	81%	80%	80%
Pennsylvania R. R.	59%	59%	59	59%	59	58%
1st mortgage.....						
Gen'l mort.....						
Gen'l mort reg.....						
Consol. mort. 6th.....						
Consol. mort. reg.....	119%	119%				
Pa. State 5th, new.....						
do 4th, new.....						
do 3th, 1912.....						
Phila. & Reading.....	27%	26%	25%	25%	25%	25%
1st mortgage 6th.....				120		
7th of 1893.....						
7th, new convert.....	75%					
Consol. mort. 7th.....	125%					
Consol. mort. reg.....		125%				
Gen'l mort. 6th.....	95	95%	95%	96	96	96%
Def. Income bonds.....						
Philadelphia & Erie						
1st mortgage 5th.....			105			105
2d mortgage 7th.....	112	112%				
Pittsb., Cin. & St. L. 7th				120%		
Pittsb., Tit. & Buff. 7th			93%		93%	
Schuylkill Navi't'n.						
Preferred.....	14%					13%
6th, 1897.....		103				
6th, 1907.....					89%	89%
United Co. of N. J.....	120	121	121	121	121	121
Hestonville, (Horse).....		15				
Chestnut & Walnut.....						

## Baltimore Stock Exchange.

Closing Prices for the Week Ending Feb. 19.

Tu. 13. W. 14. Th. 15. F. 16. Sat. 17. M. 19.

Baltimore & Ohio.....		200			200	
6th, 1885.....						
Central Ohio (\$50).....						
1st mortgage.....	110%			50%	50%	
Marietta & Cincin'ti.				110%		
1st mortgage, 7th.....	132%					
2d mortgage, 7th.....	104	104	104	103%	103%	103%
3d mortgage, 8th.....	54%	54%	54%	54	54	54
Northern Cen. (\$50).....		55				54%
2d mort. 6th, 1885.....					103%	
3d mort. 6th, 1900.....						
6th, 1900, gold.....					114%	114%
6th, 1904, gold.....						
Pitts. & Connellsv. 7th					121%	
Virginia 6th Consol.....						51
Consol. coupons.....	48	48%				
10-40 bonds.....	40%					
Def'd Certificates.....						
New 3th.....		40%				
City Passenger R. R.						

## London Stock Exchange.

Closing Prices

Jan. 26. Feb. 2.

Baltimore and Ohio 5th, 1927.....	107	109	108	110
Central of N. J., \$100 shares.....	70	75	70	75
Do. consol. mort.....	112	114	112	114
Do. Income Bonds.....	88	92	88	92
Central Pacific of Cal., \$100 shs.....	86	87	85%	86%
Do. 1st mort. 6th, 1895-'98.....	116	119	116	118
Det., G'd Haven & Mil. Equip bds. 118	120	120	118	120
Do. Con. M. sp. c., till '83 after 6 p. c. 117	113	117	117	119

Illinois Central \$100 shares.....	149%	150%	150	151
Do. S. F. 5th, 1903.....	105	107	105	107
Lehigh Valley Cons. mort. 1923.....	115	120	115	120
Louisville and Nashville mort. 6th 94	96	95	95	97
Do. capital stock \$100 shares.....	57	58	59	60
N. Y. Cen. & Hud. E. mort. bonds. 130	135	130	135	
Do. \$100 shares.....	131	132	129%	130%
Do. mort. bonds (stg.).....	119	121	119	121
N. Y. Lake Erie & West. \$100 shs. 40%	40%	39%	40%	
Do. 6 p. c. pref. \$100 shares.....	84	86	84	86
Do. 1st Con. Mort. bonds (Erie). 130	135	130	135	
Do. do. Funded Coupon bonds. 125	130	125	130	
Do. 2d Consol. Mort. bonds.....	99	101	99	101
Do. do. Funded Coupon bonds.....	97	99	97	99
N. Y., Pa. & Ohio 1st mort. bonds.....	57	58%	56	57
Do. Prior Lien bonds (sterling). 103	106	103	106	
Pennsylvania \$50 shares.....	62%	63	62%	62%
General Mortgage.....	121	123	121	123
Phil. & Erie Gen. mort. 6th, 1920.....	114	116	114	116
Philadelphia & Reading \$50 shs.....	28%	29	28%	29
General Consol Mortgage.....	115	117	115	117
Do. Improvement Mortgage.....	104	106	104	106
Do. Gen. Mtg. '74, ex-def'd coup. 97	97	95	97	
St. L. Bridge 1st mort. gold bond. 122	124	122	124	
Do. 1st. pref. stock.....	92	96	92	96
S. P'fic of Cal., 1st mort 6th, 1905-6. 107	103	107%	108%	
Union Pacific 1st mtg. 6th, 1896-9. 116	118	116	118	
Wabash, St. L. & P. \$100 shares.....	34	35	33	35
Do. \$100 pref. shares.....	57	57	54%	56%
Do. gen. mort. bonds.....	82	84	81	83

## Quotations.

THE following quotations of sales of railway and other securities, for the week, are in addition to those given elsewhere in our columns.

New York.—Atlantic and Pacific 1st, 103%; Atchison, Colorado and Pacific 1st, 90; Boston and New York Air Line pref., 80%; Chicago and Milwaukee 1st, 121; Col., Chi. and Ind. Cent., reorganization certifi., 62; Chi. St. Paul, Minneapolis and Omaha, 45%; do. pref., 103%; do. consol., 106%; Cedar Falls and Minnesota, 12%; Chicago, St. Paul and Minn. 1st, 113; Chi. St. Louis and New Orleans 1st, 116%; do. 5th, 103%; Chicago, Milwaukee and St. Paul, 2d mort. 104; do. do., Wis. and Minn. div. 1st, 92%; do. Mineral Point div. 1st, 90%; do. Southern Minn. div. 1st, 105%; do. Chicago and Pacific Western div. 1st, 91%; do. Chi. and Pacific div. 1st, 108%; Chesapeake and Ohio currency 6th, 51%; do. 6th, 1911, 100%; Cleveland and Toledo, new, 107%; Central Iowa 1st, 108; Chicago, Burlington and Quincy; Denver div. 4th, 1921, 83; do. Iowa div. 4th, 87%; Columbus, Hocking Valley and Toledo 1st, 85; Central Branch Union Pacific 1st, 100; Denver and Rio Grande, 43%; do. 1st, 108; do. consol., 87%; Detroit, Monroe and Toledo 1st, 122; Delaware and Hudson 7th, reg., 1894, 118%; Denver, South Park and Pacific 1st, 98; East Tenn., Va. and Ga., 8%; do. pref., 15%; do. inc., 33%; do. 5th, 72%; Evansville and Terre Haute 1st, 96; Fort Worth and Denver, 30; do. 1st, 96%; Green Bay, Winona and St. Paul, 6; do. inc. 11%; Gulf, Colorado and Santa Fe 1st, 111%; Iowa, Midland 8th, 130%; Indiana, Bloomington and Western, 27%; do. 1st pref., 116%; Illinois Leased line, 79; International and Gt. Northern coup. 6th, 85; do. 1st, 105%; Kansas Pacific 6th, Denver div. ass., 107%; do. 6th, 1896, 107%; do. 1st consol., 98; Louisville, New Albany and Chicago, 56; do. 1st, 101%; Lake Erie and Western, 26%; Long Island, 6; do. consol. 5th, 97%; Louisville and Nashville, N. O. and Mobile div. 1st, 90; do. Nashville and Decatur 1st, 115%; Louisiana and Missouri River 1st, 116%; do. gen'l mort. 6th, 93; Memphis and Charleston, 36; Milwaukee, Lake Shore and Western pref., 42%; do. 1st, 98%; Minneapolis and St. Louis, 23; do. pref., 52; do. Iowa Ext. 1st, 111%; Missouri, Kansas and Texas, 29%; do. consol. 7th, 104%; do. 2d, 52%; do. gen'l mort. 6th, 76; Missouri Pacific, 100; do. 1st consol., 102%; do. 3d, 111; Mobile and Ohio, 15; do. 1st mort., 107; do. 3d debent., 33; Manhattan Beach, 15%; Michigan Central 5th, 101%; Metropolitan Elevated 2d, 87; Michigan Southern S. F., 106%; New York, Penn. and Ohio inc., 52%; New York City and Northern gen'l mort., 48%; New York, West Shore and Buffalo 1st, 75%; New Orleans Pacific 1st, 88%; Nashville, Chattanooga and Louisville, 57%; New York, Chicago and St. Louis, 10; do. pref., 24%; do. 1st, 96; New York, Ontario and Western, 25; do. pref., 39; Northern Pacific 1st, 103%; Norfolk and Western pref., 39%; do. gen'l mort., 101; Ohio Central, 104%; do. 1st, 86%; do. inc., 27; Oregon Railway and Nav., 132;



Pittsburgh, 18½; do. 1st, 104; do. inc., 44½; Richmond and Danville, 51½; do. debent., 59; do. 68, 93½; Richmond, Danville and West Point, 26½; St. Louis, Alton and Terre Haute div. bonds, 71½; St. Paul and Duluth, 35; do. pref., 93; St. Paul, Minn. and Man., 134½; do. 1st, 109; do. 2d, 109; do. Dakota Ext. 1st, 108½; St. Louis and Iron Mt., 75; St. Paul and Sioux City 1st, 111; St. Louis and San Francisco genl. mort., 98; do. 2d, class B, 93½; Southern Pacific of Cal. 1st, 104½; South Pacific of Mo. 1st, 104; St. Louis and Iron Mt. 58, 76; do. 2d pref. inc., 117½; Cairo and Fulton 1st, 108½; St. Louis, Kansas City and Northern, Omaha div. 1st, 109½; South Carolina 2d, 93; do. inc., 57; Toledo, Delphos and Burlington 1st, M. L., 52; Texas and Pacific, 37½; do. 1st, 106; do. inc. L. G., 56½; do. Rio Grande div. 1st, 79½; Toledo and Wabash Equip. bonds, 80; Utah Southern Ext. 1st, 100; Wabash, St. Louis and Pacific, genl. mort. 77½; do. Chicago div. 1st, 80½; do. Toledo, Peoria and Western 1st, 107½; Alabama, Class A, 81½; do. D, 83; Arkansas 78, P. B. & N. O., 44; do. M. & L. R., 50; Georgia 68, 1886, 106½; Louisiana consol. 68, 98; American Cable, 65; Mutual Union Tel., 21½; Colorado Coal and Iron, 30; do. 68, 80; Consolidation Coal, 27; Homestake Mining Co., 27½; Ontario, 21; Standard, 5½.

Boston.—Atlantic and Pacific blocks, 102; do. 68, 92½; do. inc., 18½; Atchison and Nebraska 78, 120; Atchison R. R. 4½, 81; Boston, Clinton, Fitchburg and New Bedford, 55; Chicago, Burlington and Quincy 78, 1890, 112; do. 48, old, 86; do. Denver Ext. 48, 83; do. S. W. div. 48, 80; Chesire pref., 59½; Connotton Valley, 3; Cedar Rapids and Missouri River, 78, 122½; Detroit, Lansing and Northern pref., 113; Flint and Pere Marquette, 25; do. pref., 98; Iowa Falls and Sioux City, 85½; Kansas City, Ft. Scott and Gulf, 78; do. pref., 120½; Kansas City, Topeka and Western 78, 118; Kansas City, St. Joseph and Council Bluffs 78, 112; Louisiana and Missouri River, 13; Little Rock and Ft. Smith, 32; do. 78, 92½; Mexican Central, 20; do. 78, 72; do. Block No. 3, 95; Marquette, Houghton and Ontonagon, 59; do. pref., 113½; Massachusetts Central 3; do. 68, 20; New York and New England 68, 105½; Portsmouth, Gt. Falls and Conway, 33; Rutland pref., 16½; Sonora 78, 103½; Summit Branch, 6½; South Boston, Horse, 70½; Toledo, Delphos and Burlington Main Line inc., 13; do. Branch inc., 11½; Toledo, Cincinnati and St. Louis, 4; Vermont and Canada, 17½; Wisconsin Central, 19½; do. pref., 29; do. 78, 1st series, 79½; Allouez Mining Co., 2½; Atlantic, 14; Franklin, 13; Osceola, 31; Pawabic, 9½.

Philadelphia.—Allegheny Valley, 5; Buffalo, New York and Philadelphia, 15½; Central Transp., 34; Northern Pacific pref. scrip, 81; Nesquehoning Valley, 53; Northern Central 58, series B, 95½; Pittsburgh Water Loan 78 of 1875, 123; Philadelphia City 68, 1894, 127; do. 68, 1903, 133; do. 48, 1903, 110; Philadelphia, Germantown and Norristown, 105½; Philadelphia and Reading R. R. scrip, 108; do. adj. scrip, 87; do. genl. mort. 78, 101½; do. debent. 68, 75; do. consol. mort., 58, 1st series, 84½; do. Coal and Iron debent. 78, 76; Philadelphia, Wilmington and Baltimore 48, 105; Perkiomen 68, 103; Susquehanna Canal, 7; do. 68, 70; St. Paul and Duluth, 39½; West Jersey R. R., 49½; Western Pennsylvania 68, Pittsburgh Branch, 106; Warren and Franklin 78, 111. The latest quotations are: Pennsylvania State 58, new loan, 117@117½; do. 48, old, 110@112; do. 48, new, 116@116½; Philadelphia and Reading R. R., 25½@25¾; do. consol. mort. 78, reg., 125@126; do. genl. mort. 68, coupon, 96½@97; do. 78, 1893, 120@122; do. 78, new conv., 75@76; do. genl. mort. 78, 101½@102; do. consol. mort. 58, 1st series, —@85; do. 2d series, —@68; United New Jersey R. R. and Canal, 191@191½; Buffalo, New York and Phila., 15½@15¾; Pittsburgh, Titusville and Buffalo 78, 94@94; Camden and Amboy mort. 68, 1889, 112@113; Pennsylvania R. R., 58½@59; do. general mort. 68, coupon, 124@125; do. reg., 125@126; do. consol. mort. 68, reg., 119@120; Little Schuylkill R. R., 58@59; Schuylkill Navigation pref., 13½@14; do. 68, 1882, 89@90; Elmira and Williamsport pref., 58@59; do. 58, 99@100; Lehigh Coal and Navigation, 38½@38¾; do. 68, 1884, 102½@103; do. R. R. loan, 71@71½; do. Gold Loan, 111½@112½; do. consol. 78, reg., 112@113½; North Pennsylvania, 66@67; do. 68, 103½@104; do. 78, 120@—; do. 78, General mort. reg., —@125; Philadelphia and Erie, 16@19½; do. 78, 112@113; do. 58, 104½@—; Minehill 63@—; Catawissa, 32@34; do. pref., 56@—; do. new pref., 54@—; do. 78, 1900, 119@121; Lehigh Valley, 64½@65; do. 68, coupon, 121@—; do. reg., 121½@—; do. 78, reg., 133@135; do. consol. mort. reg., 122½@123½; Fifth and

Sixth streets (horse), 194@200; Second and Third, —@125; Thirteenth and Fifteenth, 76@80; Spruce and Pine, 43@48; Green and Coates, 76@77; Chestnut and Walnut, 89@90; Germantown, 65@70; Union, 110@—; West Philadelphia, 135@—; People's, 8½@8¾; Continental, 100@103.

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## COMMERCIAL DEPARTMENT.

### THE MEXICAN TREATY.

On motion of Mr. Windom, in the United States Senate last Monday, the ban of secrecy was removed from our commercial treaty with the Mexican Republic and it has since been published in its entirety by the daily press. Of course the various provisions of the treaty will meet with objections on the part of many, but all necessity for further secrecy terminated with the signing of the treaty by the four commissioners, ex-President Grant and William H. Trescott representing the United States, and the Mexican Minister, Matias Romero and Estanislao Canedo acting in behalf of our sister republic. The treaty is a lengthy one, commencing with the customary preamble and enumerating the free imports each country will admit from the other.

The schedule of Mexican articles to be admitted free of duty into the United States of America is as follows:

Animals, alive, specially imported for breeding purposes; barley, not pearl; beef, coffee, eggs, Esparto and other grasses, and pulp of, for the manufacture of paper; flowers, natural of all kinds; fruits, all kinds of fresh fruits, such as oranges, lemons, pineapples, limes, bananas, plantains, mangoes, &c.; goatskins, raw; henequin, sisal hemp and other like substitutes for hemp; hide ropes, hides, raw or uncured, whether dry, salted or pickled, and skins, except sheepskins with wool on; Angora goatskins, raw, without the wool, and asses' skins; india rubber, crude and milk of; indigo, ixite or Tampico fibre, jalap, leather, old scrap; logwood, berries, nuts, archill and vegetables for dyeing or used for composing dyes; molasses, palm or coconut oil; quicksilver, sarsaparilla, crude; shrimps and other shell fish, straw, unmanufactured; sugar, not above No. 16 Dutch standard in color; tobacco in leaf, unmanufactured; vegetables, fresh of all kinds; wood and timber of all kinds, unmanufactured, including ship timber.

The schedule of articles admitted free of duty from the United States into Mexico is somewhat more extensive and contains the following:

Accordeons and harmonicas; anvils; asbestos for roofs; bars of steel for mines, round or octagonal; barrows and hand trucks with one or two wheels; bricks, refractory and all kinds of bricks; books, printed, unbound or bound in whole or in the greater part with paper or cloth; beams, small and rafters of iron for roofs, provided that they cannot be made use of for other objects in which iron is employed; coal of all kinds; cars and carts with springs; coaches and cars for railways; crucibles and melting pots of all materials and sizes; cane; knives; clocks, mantle or wall; diligences and road carriages of all kinds and dimensions; dynamite; fire pumps, engines and ordinary pumps for irrigation and other purposes; faucets; fuse and wick, for mines; feed, dry and straw; fruits, fresh; firewood; fish, fresh; guano; hoes, mattocks and their handles; houses of wood or iron, complete; hoes, common agricultural knives without their sheaths; scythes, sickles, harrows, rakes, shovels, pickaxes, spades and mattocks for agriculture; henequin bags, on condition that they be used for subsequent exportation with Mexican products; ice; iron and steel made into rails for railways; instruments, scientific; ink, printing; iron beams; lime, hydraulic; locomotives lithographic stones; masts and anchors for vessels, large or small; marble in blocks; marble in flags for pave

ments not exceeding forty centimetres in square and polished only on one side; machines and apparatus of all kinds for industrial, agricultural and mining purposes, sciences and arts, and any separate extra parts and pieces pertaining thereto.

The extra or separate parts of machinery and the apparatus that may come united or separately with the machinery are included in this provision, comprehending in this the bands of leather or rubber that serve to communicate movement, but only when imported at the same time with the machinery to which they are adapted; metals, precious, in bullion or in powder; money, legal, of silver or gold, of the United States; moulds; patterns for the arts; naphtha; oats in grain or straw; oars for small vessels; ploughs and ploughshares; paper, tarred for roofs; plants and seeds of any kind not growing in the country, for cultivation; pens, of any metal not silver or gold; petroleum, crude; petroleum or coal oil and its products for illuminating purposes; powder, common, for mines; quicksilver; rags or cloth for the manufacture of paper; roof tiles, of clay or other material; sulphur; stoves of iron for cooking and other purposes; staves and headings for barrels; soda, hyposulphite of; steam engines, sewing machines, slates for roofs and pavements; sausages, large or small; tassels of wire, mounted on bands for machinery or vegetable tassels; tools and instruments of steel, iron, brass or wood, or composed of these materials, for artisans; types, coats of arms, spaces, rules, vignettes and accessories for printing of all kinds; vegetables, fresh; wire, telegraph, the destination of which will be proven at the respective custom houses by the parties interested; wire of iron or steel for carding, from No. 26 upward; wire, barbed, for fences and the hooks and nails to fasten the same; water pipes of all classes, materials and dimensions, not considering as comprehended among them tubes of copper or metal that do not come closed or soldered with seam or with riveting in all their length; window blinds, painted or not painted.

The remainder of the treaty relates to the powers of the two countries to protect themselves from fraud in the import of articles above mentioned manufactured in other countries, the liberty on the part of either of the high contracting parties to enter into similar treaties with other nations and to the question of transit duties. The concluding clauses relate to the ratifications of the treaty which are to be exchanged within twelve months from the date of signing, January 20th, of the present year.

There will naturally be some discussion relative to the treaty, and opinions may differ as to its merits, these differences being generally based upon personal interests, while the present agitation of the tariff question may have some bearing upon the ratification of the treaty by the two republics. It is difficult at this early stage of the proceedings, when the provisions of the document have just been made public, to prognosticate the action Congress will take upon the conclusions reached by the joint commission.

#### THE FUTURE COURSE OF PRICES— LAND AND FIELD PRODUCE.

**R**ESPECTING the tendency of the overflow of population from the densely settled countries in Europe to find its way to the new and unsettled lands of the Western Hemisphere, Mr. GIFFEN's studies from our Census

statistics, referred to in our last issue, are instructive and important. He shows that while there is a considerable aggregation both of native-born and European-born people to cities and towns, there is still a wide field to be occupied by rural population.

The obvious lesson which these figures teach is plain: that Europe must, more and more, continue to be fed and clothed by America, not to speak of the exportation of timber for sheltering and manufacturing purposes. The balance of population, the balance of power, and the balance of trade are gradually being shifted from what is called the Old World to the New, and before the twentieth century is far advanced (if we can only keep from internecine strife) we may witness a transfer of wealth and political and social power such as has not occurred for more than a thousand years in the world's history.

There is less expanse of good land available in the United States than the dry figures would lead one to suppose who is not familiar with the great arid plains lying between the 100th meridian and the Sierra Nevada range—fully one-third of the entire territory of the United States. To double or treble the present population upon the good lands, must lead to a corresponding increase in values, which will have a slight tendency to increase the cost of producing cereals, meats and food supplies of all kinds. The time is near when wild unfenced land will not be available for the grazing of herds or the sowing of wheat, and which now competes so severely with European grain, as much, or more, will be raised by a more numerous population, but the cost will be slightly enhanced by the increased value of the soil.

#### DISTRIBUTION OF SETTLEMENT.

The total area of the United States, according to the last census, exclusive of Alaska, is given as 3,025,600 square miles, of which there is a land surface of 2,970,000 square miles. Of this the portion belonging to each of the three groups named, with the quantities of each, respectively, taken for settlement, is as follows, the figures being worked out from the data of area and population as given by the last census:

#### AREA OF UNITED STATES AND AREA TAKEN FOR SETTLEMENT, IN THREE GROUPS.

	Total Area, Square Miles.	Area Taken for Settlement, Square Miles.
<b>GROUP I.</b>		
Thirteen to sixteen original States.....	393,000	362,000
<b>GROUP II.</b>		
Twelve Western and Southern States*.....	605,000	560,000
<b>GROUP III.</b>		
Remaining States and Territories:		
a. Six far West States.....	620,000	370,000
b. Pacific States and Territories.....	1,407,000	277,000
Total.....	2,027,000	647,000
Grand total.....	3,025,000	1,569,000

\*Viz., Kentucky, Tennessee, Ohio, Indiana, Illinois, Michigan, Missouri, Arkansas, Louisiana, Mississippi, Alabama and Florida.

†Viz., Iowa, Wisconsin, Minnesota, Kansas, Nebraska, and Texas.  
‡Viz., California, Oregon, Dakota, Colorado, Nevada, Arizona, Idaho, Montana, Wyoming, Utah, New Mexico, and Washington.

Thus, out of the total area of three million odd square miles, rather more than one-half is the area taken for settlement; and the area not for settlement is almost exclusively in the last group of all. This group I have subdivided into two sections, the first comprising States like Iowa and Minnesota, more or less completely settled, and the second comprising the Pacific States and Territories; and of the first subsection, it will be observed, more than half is already included in the area taken for settlement. The question then arises: How much of the unsettled portion is available for settlement? and to this the answer must be—little. When I mention that Mr. Porter, the well-known American statistician, and one of the Tariff Commission, in his book on "The West," estimates that there are 1,400,000 square miles of territory in the West, of which only a tithe will ever be available for cultivation, it will be seen that the wholly unoccupied portion of the available territory must now be reduced to very small dimensions.

The next point to which I draw attention is the actual population of the first two groups, exclusive of the town population, and the proportion to the square mile. This figure I work out from the tables at pp. 26-31 of the Introduction to the Population Statistics of the United States Census:

NET RURAL POPULATION OF THE UNITED STATES, EXCLUSIVE OF THE TOWN POPULATION, IN DIFFERENT GROUPS OF STATES, WITH THE NUMBERS PER SQUARE MILE.

	Total population.	Town population.	Net rural population.	No. per Sq. Mile of Rural popul'n.
Group I.....	21,835,111	7,939,334	13,895,777	35
Group II.....	19,656,666	3,614,835	16,041,831	26 1/2
Group IIIa.....	6,761,132	847,282	5,913,850	9 1/2
Group IIIb.....	1,902,874	534,659	1,368,215	1
Total of III.....	8,664,006	1,381,941	7,282,065	..
Grand total.....	50,155,783	12,936,110	37,219,673	12

Thus, while the rural population in the thirteen original States is 35 per square mile, it amounts to no less than 26 1/2 per square mile in twelve other States which we are accustomed to speak of as more or less unoccupied. This is clearly not the case. An addition of 8 1/2 per square mile, or of little more than 5 millions in all, would make them as populous as the rural parts of the original States. Group IIIa, though it has a larger area to fill up, would nevertheless become as populous per square mile rurally as the older group of States, by an addition of about 15 millions of population. It appears, however, that a large part of this area belongs to the rainless region; so that probably less than two-thirds of this 15 millions would fill up the available area to the limit of the thirteen original States. There remains only the last division of all; but it would seem that the available area here cannot be put at more than 400,000 square miles, on which the present rural population would be about 3 per square mile; so that, if the population grows to the limit of the older States, the addition to the population necessary would be about 10 to 12 millions only. Altogether an addition of about 20 to 25 millions to the rural population of the United States—viz: 5 millions to second group, 10 millions to group IIIa, and 10 mill-



ions to group III—would seem all that is required to occupy the available area in the same way that the oldest and most settled part is now occupied. When that point is reached the present conditions of expansion must begin to change.

#### TWENTY-FIVE YEARS AHEAD.

There is still another way of looking at the matter. During the decennial period 1870-80, the increase of population in the United States was about equally distributed between the three groups—about 4 millions to each, the increase in the first group being, however, mainly in the cities. Assuming an equal division of the fifty millions additional population which will be on the territory of the United States in twenty-five years—and it is more likely that the Western States will have a larger proportionate share—this would give 16 millions more to the second group, or 11 millions more than is necessary to fill up the rural districts to the level of the Eastern States, and 16 millions to the third group, which would suffice to fill the rural districts to the Eastern level. Even looking at the matter in this way, then, the prospect is that the available area in the United States will be peopled up to the level of the thirteen original States, as regards the rural population, in the course of twenty-five years. But the distribution of the increase between the groups, as I have said, is likely to be unequal, and the West will probably be filled up with even greater rapidity. To look at the matter in yet another aspect: Of the 50 millions additional population, assuming an increase of the town population like what has been going on in the past, about 12 millions will be a town population, leaving 38 millions as the rural increase. But unless rural population is to increase in the original States, and is also to increase in the second group to more than the present level of the original States, the whole of this 38 millions, except the 5 millions required for the growth of rural population in the second group to the level of the original States, will be left for the occupation of the available area in the third group, or double what is required. Whatever way we look at the matter, then, it seems certain that in twenty-five years' time, and probably before that date, the limitation of area in the United States will be felt. There will be no longer vast tracts of virgin land for the settler. The whole available area will be peopled agriculturally, as the Eastern States are now peopled.

#### THE NARROW LIMITS OF EXPANSION.

It will be urged that it is notorious the United States can support enormous masses of population. Its available agricultural area in round figures is twelve or thirteen times that of the United Kingdom, and eight times that of France. Considering what the population of the United Kingdom or that of France is, and the superior fertility of many tracts of the United States, it appears safe enough to assume that the United States can support an indefinite increase of population, and that there is room for great expansion of population within the settled area. But assuming all this to be the case, what we may observe is that it is not quite to the present point. This is not a question of supporting a large population anyhow;

how they are to be supported is here all important. The moment there is little new land to occupy, the conditions of expansion must change; every year must bring nearer the date when the fruits of the soil will be extracted with increasing difficulty. The agriculture must become different from what it is now. What has been already said, moreover, as to the United Kingdom and France not supporting all their own population, and as to what the position in the United States would be, even as compared with the United Kingdom and France, if the geometric increase in the United States should continue no more than a century, may show that there is, after all, no room for an indefinite expansion of population within the settled area in the United States. I should like to go further, and suggest that the limits of such expansion, without a very great and almost inconceivable change in the agriculture itself, must be very narrow. Comparisons with European States on this head seem very apt to mislead. But the figure of 35 per square mile as the rural population of the older parts of the United States is, after all, one-fourth of the agricultural population of France per square mile; and there are two important differences between the agriculture of France and the United States: 1. The consuming power of the United States population is much greater, perhaps double that of the French population, so that the soil cannot be expected to support the same number of Americans as French. 2. The Western farmer in the United States grows for export, not merely to the towns of the country, but abroad. A rural population one-fourth that of France may thus be quite sufficient to settle up the country. We must not come to the subject with European ideas as to the scale of living.

#### ECONOMIC CONDITIONS FUNDAMENTALLY ALTERED.

It would be foreign to my purpose to indulge in speculation as to what will be the consequences of this approach to a complete settlement of the United States, coupled with the fact that population, whether in the United Kingdom, or in Germany, or in the United States, shows no signs of abatement in the rate of increase. It is sufficient for my purpose to point out that as the existence of vast tracts of virgin soil in the United States has permitted, during the last hundred years, an expansion of the European population without a precedent in history, has made the economic history of Europe in that period entirely different from what it would otherwise have been, so now the approach to a complete settlement must profoundly affect the world. The conditions of economic growth will be fundamentally altered. Possibly there may be chemical or other inventions rendering possible great improvements in agriculture, which will have practically the same effect as an increase of the quantity of new land available. Possibly we may have the rate of growth of population itself checked. But with the change of one condition others must change, if the masses of European people are to remain at their present level of prosperity. If there is no change, the nature of the difficulties that will arise is obvious; the masses of laborers will have to contend against a fall in the scale of living.

But while I refrain from indulging in general speculation, I may perhaps be allowed to point out some of the more immediate consequences which are likely to follow from an approach to complete settlement in the United States, of which we seem to be within a measurable distance. First of all there will probably be a diversion of a larger part of the stream of emigration from Europe and the Eastern States of the American Union to the Northwest provinces of Canada. Here there are probably about 400,000 square miles of territory available for settlement, equal in quality to the best land in the United States West. As there is no such field in the United States itself, the stream must apparently be to the new land. The second immediate consequence I should look for would be an increase of manufactures and of town population in the United States. The agricultural outlet becoming less tempting, and agricultural wages tending to fall, the population will inevitably be more and more largely drawn into manufacturing. And a third consequence will probably be a check to the tide of emigration from older countries, a greater demand upon the agriculture of those countries, or at least a mitigation of the extreme competition it now sustains from virgin soils, and possibly a reversal of the present tendency for rents to fall. Such changes may hardly be apparent for a few years, with the exception, perhaps, of the diversion of the stream of emigration to the northwest of Canada, which has begun; but it seems hardly possible to doubt that they must begin to be felt before very long—perhaps in the course of ten, and almost certainly in the course of twenty, years.

#### Commerce of New York.

The foreign imports at New York for the month of January were:—

	1881.	1882.	1883.
Ent. for cons.....	\$15,361,813	\$22,225,385	\$19,595,297
Do. for warehousing.....	5,740,490	7,259,561	8,774,434
Free goods.....	10,259,629	10,276,143	11,364,889
Specie and bullion...	4,723,427	374,584	625,593
Total ent. at port....	\$36,085,359	\$40,135,673	\$40,250,143
Withdrawn from warehouse.....	7,852,224	7,676,385	8,237,803

The foreign imports at New York for seven months ending January 31, were:—

	1881.	1882.	1883.
Ent. for cons.....	\$117,044,725	\$142,307,921	\$142,833,649
Do. warehouse.....	51,108,571	45,092,925	56,919,625
Free goods.....	73,294,615	78,416,455	79,134,782
Sp. and bullion...	75,317,953	26,662,883	6,349,546

Total en. at port...	\$136,855,874	\$292,411,133	\$289,237,602
Withdrawn from warehouse.....	60,763,735	56,993,578	59,035,489

The duties received at New York for the seven months ending with January were:—

	1880-'81.	1881-'82.	1882-'83.
In July.....	\$13,360,394 37	\$12,079,573 95	\$13,778,752 87
In August.....	14,492,361 87	15,205,469 58	16,483,260 62
In September.....	12,856,636 10	14,104,647 51	14,600,362 74
In October.....	10,574,333 53	13,011,426 27	13,095,876 47
In November.....	9,079,082 36	9,711,039 46	9,938,679 71
In December.....	9,230,734 57	10,972,321 38	10,380,192 56
In January..	10,572,559 75	13,387,515 96	12,574,837 84

Total 7 mon..	\$80,166,101 95	\$88,470,994 11	\$90,893,962 81
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The exports from New York to foreign ports for the month of January were:—

	1881.	1882.	1883.
Dom. produce.....	\$28,256,320	\$26,604,780	\$27,784,632
For free goods.....	1,308,767	424,582	608,839
Do. dutiable.....	429,832	459,372	497,458
Specie and bullion...	1,034,514	1,270,411	1,390,700

Total exports.....	\$31,299,433	\$29,119,175	\$30,281,649
Do. exclusive of specie.....	30,264,919	27,848,734	28,890,949

The exports from New York to foreign ports, for seven months ending January 31, were:—

	1881.	1882.	1883.
Dom. produce.....	\$244,202,820	\$207,868,960	\$210,424,550
For free goods.....	3,419,280	3,732,679	3,962,496
Do. dutiable.....	3,482,169	3,383,944	3,474,265
Sp. and bullion...	5,683,815	7,541,490	13,493,373

Total exports.....	\$256,788,124	\$222,527,083	\$231,153,684
Do. exclusive of specie.....	\$251,104,268	\$214,985,593	\$217,661,311

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## MISCELLANEOUS.

[Written for the American Railroad Journal].

### Conversion of Wind-Power into Electricity, and its Adaptation to the Propulsion of Railway Trains.

BY W. L. SILVEY.

THAT the adaptation of electricity to practical purposes is assured, and that its employment for railway propulsion is now being pushed with vigor, I am well aware; therefore let me advance the following idea, which, although new and novel, may interest a large class of your readers and may be adapted to practical purposes. That natural forces are the most prolific sources of power, no one pretends to deny, and that wind-power is one of our most economical sources of motive-energy the example of four thousand years has fully demonstrated. However, the efficiency of wind-power as a motor depends upon the form of machinery used to collect its energy. This can be considered in the light of frictional power, that is to say the more surface there is exposed to the direct action of the progressive wind-current the greater friction will be exerted; hence the greater efficiency of the apparatus used to collect and direct the wind energy to practical useful purposes. Therefore the wind engine, windmill, or whatever name they assume, exposing the greatest frictional surface on one side with but little friction on the other, is undoubtedly the machine best suited to the purpose in view. After power is acquired, it is little trouble to find use for it, and, as my subject indicates, I propose to adapt wind power to railway purposes. The transmission of power to a distance through its conversion into electricity being a demonstrated fact, puts wind power into an attitude of success never before attained.

The plans which I propose for the accomplishment of the end in view are as follows: Along the line of railroad, at suitable distances, wind-engines are to be located, arranged expressly for the purpose of converting wind-power into electricity, which is to be employed expressly for driving the trains. Let the wind-engines be connected to electric generators or dynamo-machines in such a way that the generator will be entirely cut out of the electric circuit until a sufficient speed has been attained at each starting of the machine or with each successive wind current. The reason for this is apparent, for until the generator is going at a speed at which high tension currents are generated, the current which would be liable to flow out of the line into the machine would reverse its magnetism. The electric current from the generator may be applied directly to the rails, one wire going to each rail and by suitable brushes or connectors direct to the electric motors on the train; or where very intense currents are to be employed, or extra insulation is required, an overhanging wire may be used for the conveyance of one current and the rails for the return of the current. To accomplish this it will be found quite easy to attach brushes to

the top of the car, so arranged as to pick up the overhanging wire or take the current therefrom, and after conveying it through the electro-motors on the cars, release it through the wheels and rails to return and complete its circuit.

This plan, which would work well on short circuits or where a very few generators are used, would, when adapted to long lines or where several generators are employed, require to be slightly modified. The following arrangement will evidently work well in such cases: Instead of using the current direct from the generator for driving the trains, let it be stored in accumulators situated at each station, to be released into the line as needed, upon a given signal from the train, and in this way a current suitable to the load can be readily applied. Moreover, on this plan the line may be divided into sections, with a generator attached to each section, which entirely obviates the possibility of the action of one current interfering with another. It is a known fact that an electro-motor may become an efficient electric generator if driven at a speed above its normal capacity; hence the cars in descending a grade will drive their motor at a high speed and the electric current thus generated will flow back into the accumulators to be used when greater power is needed or by other trains. In cases of steep gradient, a separate motor may be attached to each car, which is a very great advantage over our present system of locomotion, where an engine at one end of the train must do all the work, while if a certain part of the work is performed at several points on the train a great saving of power is effected. More than this, the train may be heated and lighted from the same source as that which furnishes the power for driving it; and in case of wrecks or railroad disasters, all danger of conflagrations or explosions would be avoided, for as soon as the wheels leave the track the current would cease to flow; hence the entire danger would be obviated.

That we already have wind-power to accomplish the desired end is proven by a reference to Holland, where hundreds of windmills are constantly in use for pumping water to prevent inundation, and to dry the lakes which are being reclaimed from the sea. China also furnishes an example, where wind-power is used in irrigation and for propelling wagons across their level plains. All that we now need is to select some efficient wind-engine in connection with a good electro-motor and generator to make such an electric railway a practical and economical success.

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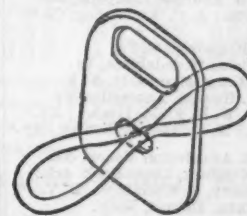
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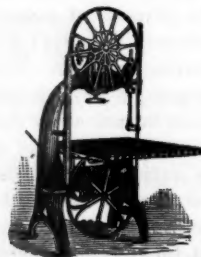
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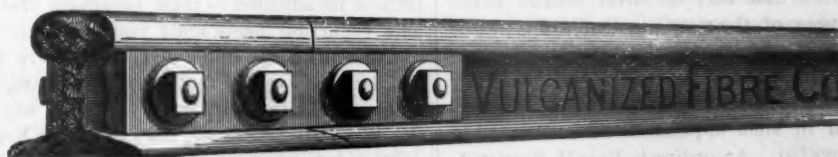
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## STREET RAILWAY DEPARTMENT.

[This department of the AMERICAN RAILROAD JOURNAL is devoted to the interests of Street Railways; and communications, suggestions and items of information relative to their organization, management and appliances are solicited by the editor. All communications should be accompanied by the name and address of the writer.]

### Street Railways at the Chicago Exposition.

We propose in our next issue to devote considerable space to a prospectus of the approaching National Exposition of Railway Appliances which opens at Chicago in May next; and at present we will simply outline that feature of the display which affects street railways. The merits of street roads to a full opportunity for exhibition have been freely admitted by the board of managers, and "Department I" of the exposition will be devoted entirely to Street Railway Appliances. In this department there will be one gold, eight silver and eighteen bronze medals awarded. We append the premium list as copied from the secretary's published book of regulations:

Best Iron Wheel.....	Silver Medal
Best Combination Wheel.....	Silver Medal
Best Rail.....	Silver Medal
Best Rail Joint.....	Silver Medal
Best Car.....	Gold Medal
Best Car Spring.....	Silver Medal
Best Draw Spring.....	Bronze Medal
Best Street Car Gong.....	Bronze Medal
Best Bell Cord and Fixtures Complete.....	Bronze Medal
Best Fare Box.....	Silver Medal
Best Center Lamp.....	Silver Medal
Best End Lamp.....	Bronze Medal
Best Hand Rail Bracket.....	Bronze Medal
Best Hand Rail Socket.....	Bronze Medal
Best Journal Bearing.....	Bronze Medal
Best Door Locks.....	Bronze Medal
Best Window Fixtures.....	Bronze Medal
Best Window Blinds Complete.....	Bronze Medal
Best Registering Punch.....	Bronze Medal
Best Registering Device.....	Bronze Medal
Best Track Cleaner.....	Silver Medal
Best Sheave for Sliding Door.....	Bronze Medal
Best Change Gate.....	Bronze Medal
Best Hand Hook and Plate.....	Bronze Medal
Best Door Handle.....	Bronze Medal
Best Door Roller.....	Bronze Medal
Best Hame Bell.....	Bronze Medal

It will be seen that this list has been carefully selected with a view to a display of Street Railway appliances, and awards are made varying in value as the appliance may vary in importance. The gold medal is properly to be awarded to the best car; the silver medals to the appliances of the most practical utility; while the bronze medals are designed to stimulate improvement in the minor details of street railway appurtenances, but merit only will not be recognized in such appliances as are named in the above list. According to Rule II, Section 1, "articles may be entered either in 'competition' for medals, or for 'exhibition only,' at the option of the exhibitor. The Premium List is not intended to exclude proper articles not named therein, but such will be received for exhibition and assigned space, and, if entered for medals, will be assigned to proper 'classes,' and examined by the jurors with a view to the same recognition by the Board as if named in the list." The managers have simply indexed the most urgent needs of street railways, but the inventor is allowed every latitude to exercise his skill and ingenuity to further the interests of street roads, and no meritorious appliance will go unrewarded.

It is not only in Department I that street railways have a special interest. Medals are

awarded in nearly all the remaining departments, which have either an immediate or secondary bearing upon improvements in street road appliances. In Department A devoted to rolling-stock, there are many medals awarded for appliances that may be used in common by steam and horse railroads. The same is true regarding Departments B of Machinery, C, of Trade Goods; D, of Metals; E, of Oils, Varnishes and Paints, and in Department H, devoted to Miscellaneous appliances. There are over a hundred exhibits contemplated, which are of the greatest interest to street railway managers, and considering the liberal number of awards made, and the general scope allowed inventors, it will be a matter of surprise if there is not a good attendance of these gentlemen at the exposition. Since the newly formed American Street Railway Association have fixed upon Chicago as their next place of meeting it is to be regretted that they did not select a date which would enable them to hold their annual convention simultaneously with the approaching display, thus enabling the members to accomplish a two-fold purpose in visiting Chicago, and assuring the association a large attendance at the meeting.

Further information regarding the exposition will be published in another portion of our next issue, while those who desire additional particulars will, we presume, have no difficulty in ascertaining them by applying to the Secretary, E. H. Talbott, whose address is the Grand Pacific Hotel, Chicago, Ill.

### Reduction of Fares.

It was extensively rumored last week that upon the passage of the bill to reduce the fares upon the elevated roads in this city to five cents, the managers of the surface roads would follow this action by reducing the fare upon the street cars of New York City to four cents. This rumor has since been authoritatively denied, and we are glad to know that it was groundless. There is no call for such a step as this, which would reduce the revenue of street car companies twenty per cent, while they would gain little or no addition to their passenger travel. The reduction made some years ago from six to five cents was a wise action, since a fare was adopted that avoided the necessity of changing money to obtain a perplexing odd cent, and at the same time lessened the expense of horse car travel, but a four-cent fare would revive the old nuisance of making constant change, while there is certainly no call for a reduction on the ground of overcharge. The Street Railway companies can safely maintain the old fare despite the passage of the elevated road bill, for a certain class of travelers will always patronize the surface roads. Invalids and aged persons who would avoid climbing the stairs leading to the elevated stations, persons who wish to ride to particular points midway between the two stations of the elevated roads and timid people who dislike to face the real or fancied dangers of the aerial structures. In stormy weather this number is greatly augmented by others who desire to avoid as much walking as possible, and will sacrifice a little time in order to be conveyed to a spot nearer

their residence or place of business than the elevated road could carry them. If instead of reducing fares the managers of street railways will increase the facilities for the comfort of their passengers, add to the number of their smoking-cars, a luxury the elevated roads do not boast, and enforce punctuality in their trips, they will easily maintain a satisfactory showing as to the number of their passengers, and possibly win over many of the present patrons of their elevated rivals.

### A New System of Heating Street Cars.

Of late considerable attention has been paid to the subject of heating street cars, and several letters upon the subject have of late appeared in the AMERICAN RAILROAD JOURNAL. The public, believing it to be possible to heat the cars, have complained of the discomforts of a ride in the cars of the surface roads, and have come almost to demand that all should be heated. The street car companies, in this city particularly, have begun to realize that by heating the cars they could retain more of the traffic, which now naturally seeks the warmed cars of the elevated roads. In some cities on lines which run for considerable distances into the suburban districts stoves have been used in the cars during the winter months for several years, but this method of heating had several objections. Inventors have devoted much time and thought to the subject, and a number of good systems have been devised, but in almost all of them the trouble has been that while one or two seats were warm—sometimes uncomfortably hot—the car was not warmed, so that by far the larger proportion of the passengers received no benefit from what heat there was.

Our representative has examined a method of heating as applied to several of the cars of the Third Avenue Railroad in this city, which would seem to have actually and fully overcome all the difficulties and objections to the other car heaters. This method, as introduced by the New York Car Heating Company, whose office is in the Equitable Building, 120 Broadway, consists of a pipe laid on each side of the car, under the seats, at the feet of the passengers (where heat is required), running the whole length of the car. These pipes are filled with a compound which possesses the quality of receiving heat rapidly to an unusual degree, and of dispensing or radiating it slowly for a long time. They are so arranged that by connecting with a flexible steam pipe on the outside of the car a jet of steam is passed through them and the compound heated in a few minutes to any desired temperature. The heat thus stored is gradually diffused through the entire car, and an agreeable, uniform temperature maintained for several hours. Any degree of temperature required can be secured. The steam is supplied by an ordinary boiler at the depot, and it has been demonstrated beyond all question that a car may be warmed in the depot; and during a trip requiring over two and a half hours the temperature be maintained at approximately the same degree as when the car left the depot. The car on which the tests have been made was No. 143 of the



Third Avenue Railroad, and an accurate record of the temperatures was kept and may be seen at the New York Car Heating Company's office. This record shows that in ninety-one trips made during the first twenty days the temperature of the car upon arriving back at the depot at Third Avenue and One Hundred and Thirtieth Street was upon an average less than one degree below what it was on starting on the down trip—the trip requiring two hours and forty minutes—while in several instances the temperature was actually higher at the end than at the beginning of the trip. This can be accounted for only by the fact that as the car neared the end of the trip there were fewer passengers to get off, and so the doors were not so frequently opened. On the trip on which our representative was a passenger the temperature on starting was 42 degrees Fahrenheit, at Sixty-fifth Street 48, at Sixth Street 48, at City Hall 48; and returning, at Sixth Street 46, at Sixty-fifth Street 44, and at the depot at One Hundred and Thirtieth Street 42—exactly as it started. The outside temperature that day was 16 degrees. Of course there was and could be no offensive odors, as is so frequently the case where a stove is used, and there was no possibility of danger in case of a "smash up." It will be well worth the while of any one interested in street railways or in the subject of car heating, to take a trip in one of the warmed cars on the Third Avenue line. The cars which are equipped with this system may be identified by a card in the window bearing the words "Warm Car," and the initials "N. Y. C. H. Co." This method of heating could be applied on the elevated roads, doing away with the terrible cold of the first trip—for scarcely any one who has had occasion to ride down on one of the early trips has failed to have reasonable ground for complaint on this score.

This method has been examined and tested by some of the ablest engineers in the country, and has received their warmest commendation and endorsement. The Third Avenue Railroad has shown commendable enterprise in being first to introduce this system, but has been promptly followed by the De Kalb Avenue Railroad of Brooklyn, which is now having a number of new cars fitted up with it.

We would advise every railroad official desirous of furnishing comfortable cars for the traveling public to thoroughly investigate this new and novel system. The Car Heating Company will be glad to show the results already obtained and give explanations at its office, 120 Broadway, New York City.

#### STREET RAILWAY NOTES.

THE Committee on Street Railways, of Boston, Mass., met last week to hear Mr. Prentiss Cummings, on the petition of the Cambridge Railroad Company that it may have authority to issue bonds to be secured by mortgage of its franchise and property, and on an order looking to the expediency of so amending the public statutes that street railroads may have, as steam railroads have, the right to emit bonds on mortgage security. He pointed out that under the present Massachusetts laws hereafter property is not covered by a mortgage already

issued, and that a street railroad company borrowing money on mortgage would be liable to criminal prosecution in disposing of any of its live-stock, while by the gradual changes of time the property covered by such mortgage would wholly disappear. He asked, therefore, for authority for the company to give a lien on the horses that it may purchase to make good its stock. He submitted drafts of an act authorizing their issue, adding that the Cambridge Company desires to raise \$600,000 to complete its payment to the Union Company, with which it has recently consolidated, and that it would issue bonds to the amount of \$1,000,000, its capital stock being \$1,600,000. The committee also heard Mr. Cummings on the petition of the Somerville Street Railroad Company, the Middlesex Railroad Company, the Union Railroad Company and the Cambridge Railroad Company, for ratification of certain contracts affected by the consolidation of the Cambridge and the Union roads.

WITH the approach of Spring, and the consequent abatement of cold weather, the vexed question of street car heating "goes on" again next Fall when it will be revived in all its vigor. The public benefactor is yet to appear who will devise a system of heating street cars that may be readily employed and give satisfaction to both the railway companies and their passengers. We propose to devote some attention to this subject, and would be glad to receive the practical views of practical railway men which may bear upon the question of street car heating. In this connection we call the attention of our readers to the article published above, entitled "A New System of Heating Street Cars."

CITY REGISTER ROBB, of Baltimore, has determined to make an effort to secure the immediate payment of the amounts due by the several street railway companies for park tax. The Baltimore City Passenger Railway Company and the York Road Railway Company have paid up in full. The Monumental and People's lines have never paid anything, and judgment has been secured against the People's line for \$2,379.42, and against the Monumental line for \$1,472.38. Each line will owe for another quarter in March. The Citizens' line owes for two quarters now, the North Baltimore one quarter and the Union line for two quarters. The total is a considerable sum, and the money is needed by the park commissioners to meet the current expenses of the parks.

MANY of the street railroad companies of Newark, N. J., have forwarded their annual statement to Trenton, as required by law. The Orange and Newark Company, the largest in the State, has filed no statement, but judging by those submitted by the other roads, the street railways of Newark have conducted a prosperous business during the past year. The uniform reduction of fares within the city limits from six to five cents which took place two years ago has apparently resulted in a decided increase of passenger travel, and a gain in the yearly receipts of the various companies.

THE Supreme Court Commissioners of New York have reported adversely on the application of the Broadway Underground Connecting Railway Company for leave to construct its railroad in this city under Broadway, from Park place to Union square. They say the company has not shown that it has got or will get money enough to build the road and pay for the damage it might do, or that the railroad if built will connect at either end with any similar or other road.

#### "The Name On 'Em."

A HALF frozen pedestrian splattered and splashed through the slush in the Bowery last evening in pursuit of a third avenue car, in the window of which hung a placard with the cheering inscription, "Warm car." Overtaking it he sat down with an air of expectancy and hope that soon vanished. When the conductor came for his fare the passenger said discontentedly, "I can freeze just as well outside as I can in here. I thought this was a warm car?"

"I bought a mince pie once," said the conductor, with seeming irrelevance. "The feller that sold 'em was hollerin', 'Hot mince pies! Mine was froze stiff, an' I asked him what he holere'd 'em hot for, an' all he said was, 'That's the name on 'em.'"

#### A Street Car Incident.

He was a gentleman who wore overalls and carried a tin dinner-pail. His clothes were unready made and his boots were not symmetrical. He said the long journey of five miles each way to and from his work was trying. "Why don't you live in the city?" Because, sorr—"in a rich Milesian brogue—"if I lived in the city I should have to live in a tenement house. You don't know the kind of people who live there. They're a bad lot all through, generally. Sights go on no woman or child should see. I want to save my wife and children from seeing corruption, so I moved out here. Good-night, sorr." And he left the car at the little cottage, whose inmates were sheltered from "corruption," and was greeted with a chorus of "Here's father," that showed the gentleman with the dinner-pail had not lavished care without receiving a return in love.

### JOHN STEPHENSON CO. [LIMITED.]



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Superior Elegance, Lightness and Durability. The result of 50 years' experience.

Adapted to all countries and climates. Combining all valuable improvements. Shipped to Foreign Parts with greatest care, and at most favorable rates.

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Best quality and simplest plan in use.



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## Continuous Automatic FREIGHT BRAKES.

Requiring no other Connection  
between Cars than the or-  
dinary Coupling-Link  
and Pin.

**SIMPLE, DURABLE, AND EFFICIENT.**

Brakes can be applied to every Car in the longest train, from the engine or caboose, or from any car in the train. It can be readily attached to any car, and adapted to ordinary brake beams, shoes, etc. There is no possibility of damaging wheels by "sliding."

**PATENTED MAY 23, 1882.**

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Locomotives—Two Second-hand Narrow-Gauge Engines in good order.

One Second-hand "Tank" Narrow-Gauge Engine, 10 tons. Several Second-hand Standard-Gauge Locomotives in good order, immediate delivery.

One new 3ft. Gauge Passenger Engine, 22 tons, prompt delivery.

Six new 4ft. 8½ Gauge Locomotives, cylinders 17x24, weight 35 tons. November and December delivery.

Two new 3ft. Gauge Locomotives, Cylinders 12x18, weight 20 tons. December and January delivery.

Cars—Passenger and Freight Cars of all descriptions for early delivery.

Rails—16lb., 20lb. 30lb. 35lb. and 56lb. Rails.

Car Wheels and Axles.

Narrow-Gauge Rolling-stock a specialty.

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AND RAILROAD TIES.**

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OFFICE: 9 MURRAY ST.,  
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Established 1863.

# MOLLER & SCHUMANN

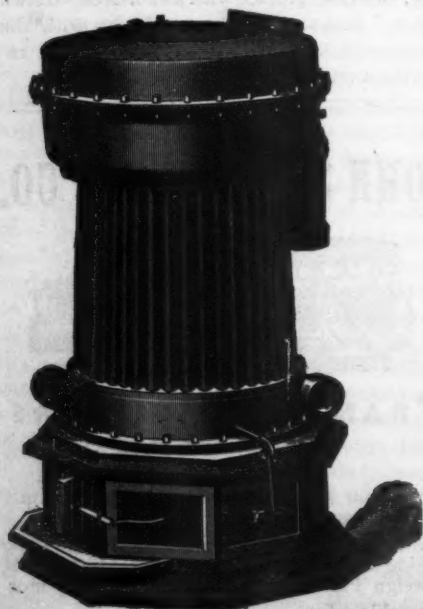
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Economy in Fuel and RAPID CIRCULA-

TION. It heats quickly, is SELF-REGULA-

TING, and can be used for

either STEAM OR HOT WATER.

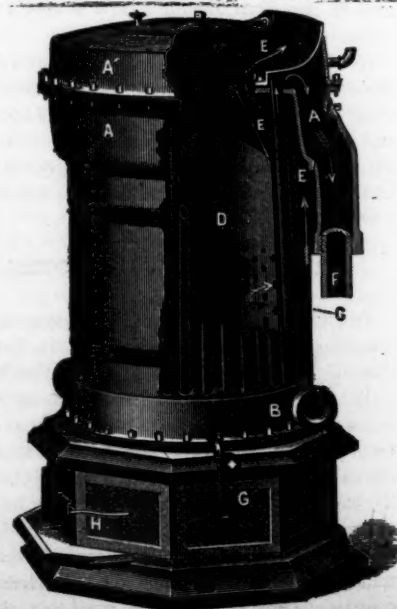
The Water Tubes do not come in contact with the Coals, but occupy the Smoke Flue in such a manner as to absorb the greatest amount of heat from Coal in a low State of combustion without danger of chilling the fire.

At the last "Mechanics' Fair" it received the Silver Medal, being the highest award to heaters of any kind.

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## NEW INVENTIONS.

## TO INVENTORS AND PATENTEES.

THIS department is devoted to the notice, consideration and description of new and valuable inventions applicable to Railroads, Steam Navigation, Machinery, Manufactures, Mining and Street Railways. New patents of this description appearing in the weekly Official Gazette of the Patent Office are duly noticed in our columns, and full description of those most useful and important are published *free of charge*.

**43-** Inventors, Patentees, and the holders of Patents are requested to forward us their claims and specifications, with description of their inventions for our examination with a view to their publication in this department. Descriptive cuts, diagrams, and illustrations of the same are also desired.

**43-** In selecting inventions for full description in this department, the editor will be guided solely by their importance and value, and their interest to the readers of the AMERICAN RAILROAD JOURNAL.

### List of Patents for Inventions Relating to Railways, Manufacturing, Mining, Street Cars, Machinery, Etc.

BEARING DATE OF FEBRUARY 13, 1883.

- 272,035. Smoke and Gas Consuming Furnace: George Farr, Cincinnati, Ohio.  
 272,053. Valve-Gear: Rudolph M. Hunter, Philadelphia, Pa.  
 272,096. Car-Brake: Benjamin L. Stowe, Brooklyn, assignor to J. Van D. Reed, New York.  
 272,097. Automatic Car-Brake: Benjamin L. Stowe, New York, assignor to J. Van D. Reed, same place.  
 272,098. Car-Brake: Benjamin L. Stowe, Brooklyn, assignor to J. Van D. Reed, New York.  
 272,099. Railroad Gate: Charles F. Strack, Fort Wayne, Ind., assignor of one-half to Arthur M. Brackenridge, same place.  
 272,114. Saw-Guard: Leopold Bertsche and Frank Lofink, Pittsburgh, Pa.; said Bertsche assignor to said Lofink.  
 272,124. Refrigerator-Car: David W. Davis, Detroit, Mich.  
 272,135. Car-Coupling: Lyman Hatfield, Cleveland, Ohio, assignor of one-half to Henry C. Ranney, same place.  
 272,142. Electric Railway Signal: Wm. W. Le Grande, Louisville, Ky., assignor of three-fourths to George Wolf, F. De Funiak, and T. J. Pottinger, all of same place.  
 272,154. Car-Truck: Isaac H. Randall, Boston, Mass.  
 272,170. Journal and Stuffing Box: William A. Stone, Lorain, Ohio.  
 272,206. Spittoon for Railroad Cars and similar places: George D. Burton, New Ipswich, N. H.  
 272,210. Telegraphic Relay: Thos. Cochran, Brooklyn, N. Y.  
 272,218. Locomotive: Mark A. Dees, Moss Point, Miss.  
 272,220. Machine-Table: William H. Doane and W. Bugbee, Cincinnati, Ohio.  
 272,225. Steam-Boiler: Alvin Ford, Chicago, Ill., assignor of one-half to Charles B. Coventry, same place.  
 272,230. Railway-Recorder: Levi K. Fuller, Brattleborough, Vt.  
 272,241. Car-Brake: Adolph G. Hamm and Harry W. Eisenblase, Burlington, Iowa.  
 272,245. Locomotive Head-Light: Arthur Harris, Chicago, Ill., assignor to J. McGregor Adams.  
 272,264. Steam Pumping-Engine: Philip S. Kingsland, Chicago, Ill.  
 272,267. Safety-Truck for Railway-Cars: David Marion Kirkpatrick, Kansas City, Mo.  
 272,276. Electric Railway-Signal: William W. Le Grande, Louisville, Ky., assignor of three-fourths to George Wolf, F. De Funiak, and T. J. Pottinger, all of same place.  
 272,277. Tool-Post for Lathes: Charles A. Lieb, New York.

- 272,285. Car-Coupling: Eugene B. Magnus, Brooklyn, N. Y.  
 272,286. Gage-Cook: Richard S. Manchester, Dayton, Ohio, assignor of one-half to William Watts Lake, same place.  
 272,294. Car-Coupling: John S. McGraw, Richmond, Ind.  
 272,299. Car-Coupling: George Merrill and William H. Merrill, Riverside, Mich.  
 272,304. Tool-Holder for Lathes: Conrad Muller, Columbus, Ohio.  
 272,306. Steam-Engine: John W. Nystrom, Philadelphia, Pa.  
 272,307. Steam-Engine Governor: John W. Nystrom, Philadelphia, Pa.  
 272,313. Railroad-Switch: Calvin M. Parks, Washington, D. C.  
 272,339. Universal-Joint Coupling: Charles Shuman, Rockford, Ill.  
 272,342. Car-Wheel: Robert McD. Smith, Annada, assignor of one-half to Henry S. Carroll, Clarksville, Mo.  
 272,358. Car-Starter: Emil Utz and Theodore Sprick, Odessa, Russia.  
 272,371. Car-Ventilator: Frank P. Abercrombie, Woodbury, N. J.  
 272,379. Oil-Cup: James W. Fenner, Cleveland, Ohio, assignor to Nathan & Dreyfus, New York.  
 272,386. Car-Coupling: John C. Look, Yuba City, Cal.  
 272,393. Balance Slide-Valve: S. Stuart Williamson, Washington, D. C., assignor of one-eighth to David K. Cartter, same place.  
 272,395. Head-Rest and Attachment for Railway-Car Seats: Henry D. Wilson, Abbeville, S. C.

### A Word or Two of Explanation.

THE department of New Inventions is conducted in the interests of our readers and of inventors of devices applicable to Railroads, Steam Navigation, Mining, Street Railways, etc. We believe that full descriptions of new and patented appliances of this nature will prove interesting to our readers, and cannot fail to bring the inventor's device into the prominent notice of that class of persons among whom he looks for the heaviest sales and royalties. No charge is made for the insertion of such description in this department, but there is a *sine qua non* requisite in all inventions before we will devote space toward their publication. They must be *new* and *valuable*. It is not our intention to offer a free advertisement to any person, and the inventor whose invention is given full description in the AMERICAN RAILROAD JOURNAL must have produced something of importance and value.

We have not established this department in a spirit of philanthropy and do not lay claim to any special generosity in publishing descriptions of new inventions free of charge. Our aim is to increase the number of both our readers and advertisers. The continued publication of valuable patents will, we think, attract readers who are interested in the problems connected with railroad and steamboat management, mining, the management of street railways, and the like, while the value of an advertisement in the columns of the JOURNAL will ultimately be apparent to inventors of appliances tending to solve these problems. It is purely a business transaction, and we do not wish inventors to feel themselves under any obligations to us through our description of their patents. If they choose to advertise or order a number of copies of the AMERICAN RAILROAD JOURNAL containing such descriptions, we would be glad to have them do so, and may

possibly ask them for an advertisement or an order, in the form of a fair business proposition, but they are under no obligation to accept our advances. In other words, there is *nothing* obligatory on their part, but at the same time there is nothing obligatory on our part either. We reserve the liberty to ignore any invention whose description is sent us without assigning any reason for such action, and if our opinion and that of the inventor as to the utility of the invention chance to differ, we propose to be guided solely by the former.

The cause of these few words of explanation lie in the fact that many inventors seem to recognize an obligation on our part to describe in full their inventions, while they in return do not feel compelled to go to any expense in order to acknowledge such publication. It would be manifestly impossible for us to publish full descriptions of all inventions of this class, when the weekly list of new patents of the sort numbers fifty or more. Every new invention of the character mentioned above is noticed in our weekly list of patents, and we shall further endeavor to give a brief description of all, but in selecting those for extended notice, we are guided simply by their importance and general utility. Our advertising pages are open at reasonable terms to all inventors and holders of patents, but this department is entirely our own, and we must be pardoned if we choose to conduct it in the manner we deem best. If inventors desire a medium through which valuable inventions of a certain class are brought into public notice free of charge, they will aid us in this direction by subscribing to and advertising in the RAILROAD JOURNAL, but they should do so solely in a practical business way, not influenced by any feelings of obligation, while none exists upon their part so to do, nor upon our part to publish any description that is forwarded us.

### Automatic Cam Switch Stand.

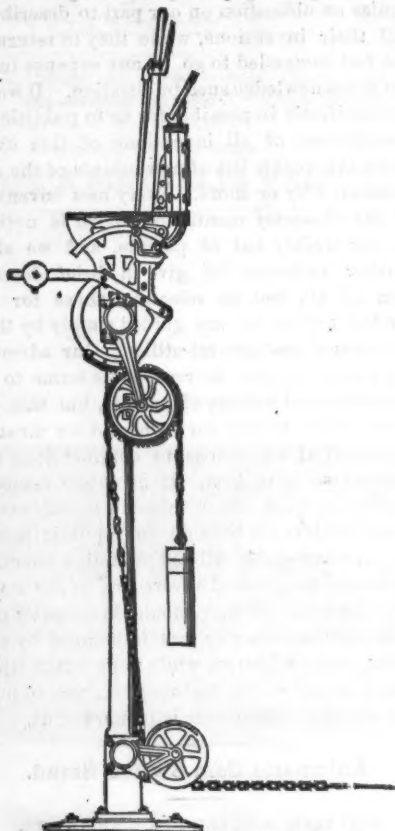
O. J. TRUE, PORT CLINTON, O., PATENTEE.

THIS Switch Stand is constructed for the throwing of split railroad switches and to guard against accidents caused by trains running through a switch when set wrong for them to pass. This Stand is automatic and always mechanically reliable in its action, throwing the switch back to the track on which it was set and locked before being moved by a passing train, and can be applied to any split switch now in use. The plan of this stand consists of a vertical crank rod passing loosely through a weighted sleeve, keyed and fastened to a hinged lever at the top of the weighted sleeve, and acting independently of the sleeve except when thrown down through a notch in the head of the sleeve, and thus fastening the crank rod and sleeve together. The sleeve passes down through a perpendicular shell or case in which is fastened a cam or V shaped track on which rests a friction roller which is fastened to the weighted sleeve. The crank rod being locked to the weighted sleeve, a train throwing the switch would turn and raise the weighted sleeve on the inclined plane or V shaped track, the weight of the sleeve throwing the switch back to its place

when relieved of the pressure of the wheels. This stand, in its construction, is very simple, strong and durable, having no weak points that are liable to get out of order. It has been used on the L. S. & M. S. Railway as a test of its practical working and durability. Between August 9th and October 28th, 1882, it was thrown under 718 trains, making a total of 71e engines and 10,125 cars running through th8 switch, forcing it to throw automatically without the slightest injury to the switch or stand, and always going back to the track to which the switch was set and locked.

### Interlocking Switch and Signal Apparatus.

[Continued from page 151.]



DISTANT SIGNAL COMPENSATOR.

THE tendency of wires to stretch has been a source of much trouble in Interlocking apparatus, and has required constant care and attention, and the variations of length caused by variations of temperature have prompted the invention of numerous devices for compensating. For this reason special attention is called to the perfect arrangement for operating the signals shown herewith, and to the simple manner in which the practical difficulties are met in the Distant Signal Compensator. At some distance below the upper girt of the lever frame is supported a wheel with three sets of cogs. The central set of cogs is of a spur rocket form, adapted to a flat linked chain, and the outer sets of cogs are similar to spur gearing with cogs extended to sharp points. On the central set of cogs hangs a section of flat-linked chain, one end of which is attached to the wire signal connection, by means of a short section of common chain; and on the other end of the flat chain hangs a weight, sufficient to keep the whole length of wire strained tight and to take the stretch out of the wire. Attached to the signal lever a yoke extends around the girt

which supports the levers, and underneath the girt this yoke is provided with sectors of cogs like the outer cogs on the chain wheel. When the signal lever is in its normal position the sector of cogs is quite clear of the chain wheel, and thus the chain wheel is left free to make a partial rotation, as the wire may lengthen or shorten, the weight constantly taking up the stretch of the wire. When the signal lever is drawn back to set the distant signal to "safety," the movement of the yoke attachment of the lever brings the sectors on the yoke into gear with the cogs on the chain wheel, and as the signal lever is moved to the end of its stroke the chain wheel is partially rotated, pulling the wire and moving the signal without any loss of movement from variations of the length of the wire. As the "Distant" signal is not required to stand at "safety" long at one time, simply while a train is due, any variation of length during the time the safety signal may remain set is of no consequence, as such variation is taken up as soon as the lever is returned to the normal position.

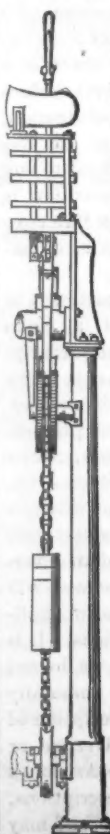
This arrangement enables a signal to be operated by wire at great distances with more ease than with other arrangements at short distances, and yields more of effective movement at the signal from the action of a common hand lever than any other arrangement. The application of the weights to overcome the stretch is by far the simplest method, and the wire always being strained towards the lever, the signal moves very promptly. This arrangement has also the important advantage of having the compensating device wholly within the signal cabin, where its condition and operation may be readily observed by the switchman, and it can receive due attention without difficulty.

### SWITCH SIGNAL OPERATED BY THE SWITCH.

At some points it has been found convenient to have switch signals, or targets, attached to the switch to indicate to the engine drivers the position of a switch, in preference to the elevated Semaphore signal used for "Home" signals; and, for such points a signal attachment is connected to the switch and to the switch lock in such a way that the signal cannot stand for "safety" until the switch has been set and the switch lock has been thrown to lock the switch in its position.

### HAND SWITCHES CONTROLLED.

In arranging to provide secure interlocking for some terminals and yards in this country, English engineers have noticed a little difficulty arising from a number of switches which are not absolutely required for the movement of the traffic, and yet without entirely re-arranging the plan of all the tracks such switches cannot be dispensed with. Such switches are generally used so seldom and irregularly that it seems useless to provide the appliances for operating them from the signal cabin and under other systems there



is no other way to make the situation safe. In the system of Interlocking offered by the Pennsylvania Steel Company, of Steelton, Penn., such cases are fully provided for, and by the use of several patented devices it is perfectly practicable to have any such switch under the full control of the interlocking levers and switch worked by law only. To use such a switch the signals must be at "danger" which holds outside trains from coming in; then the switch may be unlocked and thrown by hand. The act of unlocking it, however, holds the Interlocking apparatus *in statu quo*, and the switchman in cabin has no ability to work any lever until the hand lever has been restored to the proper position and locked. When the switch has been set to the correct position and locked, then the interlocking levers are released and the switchman in the signal cabin regains full control of the apparatus. By this improvement a switch may be fully controlled to make the interlocking perfectly safe, and at the same time the cost of a lever and the expensive connections for operating the switch, may be almost wholly avoided.

In this item several other valuable improvement not described here, have been devised and applied, to facilitate operation or save in first cost, and it may be assumed that in the various situations which may be presented for protection each point will have full consideration, and every effort will be made to provide reliable protection at the minimum of cost. The company solicit correspondence.

### Coupling Link.

ISAAC H. TRABUE, OF LOUISVILLE, KY., PATENTEE.

THIS device, which is an adjustable and automatic link for cars, consists of a plate of iron 3x6 inches in dimensions, in which a stationary link is fastened perpendicular to the transverse axis, at about one inch from the extremity. A movable link with rubber packing is also attached to the plate. The stationary link is placed on the drawhead and the adjustable link is lowered or raised to suit the approaching car. The coupler can also be modified according to circumstances. It is claimed for this patent, 1st, That the brakeman is not exposed to injury in coupling cars; 2d. That it is automatic in its action; 3d. That the old fashioned drawhead can be used; 4th. That high cars can be readily coupled to low cars, and 5th, That the concussion in coupling cars is much lessened.

### Adjustable Boiler for Traction Engines.

THE following is a description of an invention by Mr. ED. J. TAYLOR, of Alaska, W. Va., designed to furnish for Traction Engines a boiler that can be adjusted easily and leveled, while the machinery is at work, without in any way interfering with the action of the latter, and without having the ease of adjustment affected by the pressure of the moving machinery. The invention consists primarily in a road engine having its boiler suspended within its frame by trunnions extending outward from bed-plate, and having the driving-shaft passing in such trunnions, and in combination there-



with, positive means for adjusting or balancing boiler. The side rails of the frame are curved to allow the wheels free movement in turning the engine. To these side rails are secured the boiler-supporting standards or side pieces consisting of legs extending from each end of the frame and meeting at top, at which points the standards are provided with bearings to receive the trunnions of the oscillatory boiler. On top of this boiler is placed the machinery for driving the engine and operating various machines with which it may be used. The bed-plate is formed with a trough-like body to accommodate the crank and pitman; this bed-plate is secured by its bottom bearing or fastening flange to the boiler just in front of the line of the fire-box, and from the bed-plate in the same vertical plane with this bearing extend the trunnions. These trunnions are curved outwardly and upwardly from the bed-plate, and terminate in the journal ends, which are reduced where they enter the frame bearings. The upper portions or halves of these trunnions are removable and through the bores in said trunnions are passed the ends of the driving-shaft. At one end the driving-shaft is provided with a device for connection with the running gear of the engine, and at the other with the band-wheel for connection with the thrasher or other machine to be operated. The shaft is also provided with eccentrics for valve-stem. To one side of the bed-plate is placed the pump which supplies water to the boiler.

The construction thus described forms a road-engine in which the boiler does not freely oscillate—that is, does not automatically level or adjust itself, because it is hung so that one end (the front) is heavier than the other.

The boiler therefore is one for which positive means of adjustment are to be used, and the mechanism already set forth is specially devised so as to allow of a positive adjustment without any interference with the operative machinery, so that this may be working and the boiler adjusted as desired. The boiler swings freely on its trunnions about the shaft, and the latter turns freely within the trunnions as the machinery works. In this way they turn or move independently. The shaft has the advantage of a long bearing in the trunnions as well as a bearing on bed-plate; and the trunnions not only forming bearings for the shaft, but in their turn resting in the frame-bearings, the whole weight is transferred to these, and friction between the shaft and trunnions is relieved, allowing full freedom of movement.

At one end of the boiler is located the device for adjusting it.

Attached to one standard is a threaded lug; and at one corner of the boiler is a bracket having the perforation or unthreaded hole. Through this perforation freely passes a threaded bolt, the threaded lower end of which engages and works within the threaded lug. As the rod is turned down within the lug, its head bears upon the bracket and thus draws that end of the boiler down against the over-balance of the other end. As the rod is withdrawn from the lug that end of the boiler is released, and the other and heavier end swings down. In this way the boiler can be oscillated upon its trunnions by the rod and adjusted as the cir-

cumstances may require, either in traveling or in leveling the boiler for work when the engine is stationary. If desired, the device may be arranged so as to have the boiler automatically adjustable, and no positive adjusting device be used, by simply changing the position of the bed-plate with the trunnions and shaft so as to balance the boiler. In this arrangement, as well as the other, the relation of the trunnions and driving-shaft is valuable. The machinery being secured to the boiler and oscillating with it, there are no connections to be affected by the movements of the boiler, as the latter automatically adjusts itself in traveling, and the trunnions turn freely above the shaft without disturbing the machinery, in like manner as they turn when the boiler is adjusted positive.

The advantages in keeping a horizontally boiler level on hilly or mountainous roads are many, and plainly to be seen, as it is impossible to avoid burning and injuring a boiler when either end is elevated sufficiently to make it bare of water and exposed to fire for any considerable time, as is necessarily the case on a grade, unless the boiler can be leveled. It is also a very great help in enabling the engineer to carry the proper amount of water in the boiler, by having the same always level, and it will save much time in setting engine for work as the boiler can be easily leveled while on uneven ground.

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